

Draft/May 2005
Limited Distribution
Not to be quoted



Post-Elementary Education, Poverty and Development in India

JANDHYALA B G TILAK

National Institute of Educational Planning and Administration
17-B Sri Aurobindo Marg, New Delhi 110016, INDIA
[Email: jtilak@vsnl.com]

Post-Basic Education and Training

Working Paper Series - Nº 6

May 2005

Centre of African Studies, University of Edinburgh

Not to be used



Testimony of the Secretary of the Interior

Before the Senate Committee on the Interior and Natural Resources
Hearings on the Proposed Reorganization of the Department of the Interior
February 1, 1945

Testimony of the Secretary of the Interior

February 1, 1945

Printed by the Government Printing Office

This paper is part of a Six-Country Study entitled
Beyond the Basics: Education and Poverty:
The Contribution of Post-Basic Education and Training (PBET) to Poverty
Reduction: Evidence from South Asia and Sub - Saharan Africa,
funded by the British Department for International Development. Other studies
cover Ghana, Kenya, Rwanda, South Africa and Tanzania.
The views in this paper are those of the author.

Note:

The concept of 'basic education' has a different connotation in India, attributable to Mahatma Gandhi and his philosophy. As this is much different from the concept being used presently all over, say in the context of the Education For All, which is broadly equivalent to the concept of 'elementary education' in India, only the later is used in this paper.

Abstract

There is a general presumption that secondary and higher education is not necessary for economic growth and development. On the other hand, it is literacy and primary education that is argued to be important. Estimates on internal rate of return also contributed to strengthening of such a presumption. Increased national and international concerns for Education For All, also led to overall neglect of secondary and higher education in many developing countries. The problem of resource scarcity added further to the problem. Accordingly, secondary and higher education do not figure on even the poverty reduction agenda of the poor countries. Indian experience also testifies to all this. Secondary and more strikingly higher education has been subject to neglect by the government and the current situation with respect to not only elementary education, but also secondary and higher education is far from satisfactory.

Based on some of the recent research, and based on further research evidence on India presented here, it is attempted to show that the general presumption on the role of secondary and higher education in development is not valid and that post elementary education is important for reduction in poverty, in improving infant mortality and life expectancy, and for economic growth. Accordingly, it also pleads for sound and comprehensive education policies that recognise the importance of not just elementary education, but also of secondary and higher education and for integration of educational planning with development planning.

Post Elementary Education, Poverty and Development in India

Contents

Abstract

1. Introduction: Education Poverty
2. Poverty and its Reduction in India
3. Education Development in India
4. Contribution of Education to Development
5. Higher Education and Development in Asia: Recent Research Evidence
6. Secondary and Higher Education, Poverty and Development in India: Fresh Evidence
7. Policy Vacuum and Lopsided Development in Education
8. Summary and Conclusions

References

Appendix Tables

List of Tables and Figures

Tables

1. Poverty Line in India
2. Incidence of Poverty in India
3. Poverty in India, by States
4. India Human Development Indicators
5. Growth of Education in India
6. Gross Enrolment Ratio in Secondary and Higher Education, 2002-03
7. Distribution of Population by Educational Levels in India, 1998-99
8. Population with Secondary Education and above
9. Population with Secondary and Above Education,
10. Adult Population with Secondary and Higher Education, by Economic Groups
11. Intra-Sectoral Allocation of Plan Expenditure on Education in the Five Year Plans
12. Regression Coefficients of Education in Wage Regressions for Regular and Casual Workers
13. Rates of Return to Education in India
14. Average Private Rates of Return to Education, by Levels
15. Rates of Return to Secondary and Higher Education in the World Regions
16. Rates of Return to higher Education in the Asian Countries
17. Regression Estimates of Higher Education on Economic Development in Asia
18. Higher Education and Technology
19. Regression Estimates of Higher Education and Achievement of Technology in Asia
20. Coefficients of Correlation between Higher Education and Social Development Indicators
21. Coefficients of Correlation between Education and Poverty
22. Regression of In Per Capita Consumption Expenditure on Secondary and Higher Education
23. Regression of In Poverty Ratio on Secondary and Higher Education
24. Secondary and Higher Education and Infant Mortality
25. Regression of In Life Expectancy on Secondary and Higher Education

Figures

1. Inter-Relationship between Education Poverty and Income Poverty
2. Relationship between Education and Earnings in the Human Capital Framework
3. Education as a Critical Factor in the Basic Needs Framework
4. Progress of Poverty in India
5. Progress in Gross Enrolment Ratio in Secondary and Higher Education
6. Population with Secondary and Higher Education, 1999-2000
7. Education and Earnings 1978
8. GER in Higher Education and Achievement in Technology

Appendix Tables

1. Distribution of Population by Educational Levels, 1995-96, by States
2. Distribution of Workers by Educational Levels

Post-Elementary Education, Poverty and Development in India

1. Introduction: 'Education Poverty'

Poverty is a state of deprivation. It is conventionally defined in terms of income poverty, i.e., number of people below the poverty line and is measured in different ways, predominantly in terms of inadequacy of income to procure a minimum level of calories. Quite a few indices are developed in the literature that broadly relate to this phenomenon. Many scholars have also highlighted the limitations of income poverty as a measure of the complex phenomenon of poverty. An Expert Group of the Planning Commission in India (Government of India, 1993) recommended the broadening of the concept of poverty, so as to include, *inter alia*, education needs. The World Bank (1994a, p. 9) also recognised, "Poverty is not only a problem of low incomes; rather, it is a multi-dimensional problem that includes low access to opportunities for developing human capital and to education..." The World Summit for Social Development (1995) also opted for a broader definition of poverty and correspondingly for a broader integrated strategy for its eradication (see also Drèze and Sen, 1989). As UNDP (1996, p. 27) commented, " 'income poverty' is only a part of the picture. Just as human development encompasses aspects of life much broader than income, so poverty should be seen as having many dimensions" and accordingly developed the concept of 'human poverty'. It observed, "human poverty is more than income poverty; it is a denial of choices and opportunities for living a tolerable life" (UNDP, 1997, p. 2). In this sense, denial of human rights itself constitutes poverty, and accordingly a rights-based approach to poverty eradication is being increasingly argued (see e.g., Speth, 1998). Accordingly poverty is seen as deprivation of opportunities that enhance human capabilities to lead a tolerable life. Education is one such important opportunity, deprivation of which in itself represents poverty -- poverty of education or 'education poverty'. In this sense, educational deprivation or poverty of education becomes an integral part of human poverty.

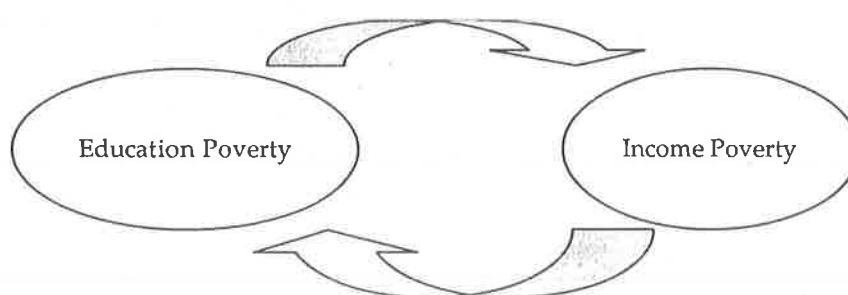
However, education poverty is discussed in the name of deprivation, exclusion etc., only in terms of illiteracy and primary education.¹ While those

¹ E.g., Sharma (2004) refers to gross enrolment ratio in primary and upper primary education as non-income indicators of poverty (along with infant mortality rate).

who are deprived of literacy and primary education constitute educationally the poorest, those who have just literacy or just primary education cannot be considered as 'non-poor.' Literacy and primary education impart abilities to read and write; but they are sufficient for people neither to speak and write with any comprehension, and understand serious writings and to get intelligently involved in any serious discussion on any matter, nor to lead any economically dignified life as mere literacy and primary education are not much valued in the labour market. Secondly, internationally and more particularly nationally in India and in a several other countries, elementary education of eight years duration, that includes primary and upper primary (middle) levels of education, is recognised as minimum need. So people who do not have at least elementary education can be considered as living below the educational poverty line, or simply as educationally poor, though a somewhat satisfactory poverty line can be drawn somewhere at the end of the secondary/senior school cycle of education.

Education poverty and income poverty are also closely related. Poverty of education is a principal factor responsible for income poverty; and income poverty does not allow the people to overcome poverty of education. Income poverty forces children to be out of school for various reasons, and thus they are denied the opportunity of participating in schooling. Thus the relationship between income poverty and education poverty is mutually reinforcing.

Figure 1: Inter-Relationship between Education Poverty and Income Poverty



Source: Tilak (2002c).

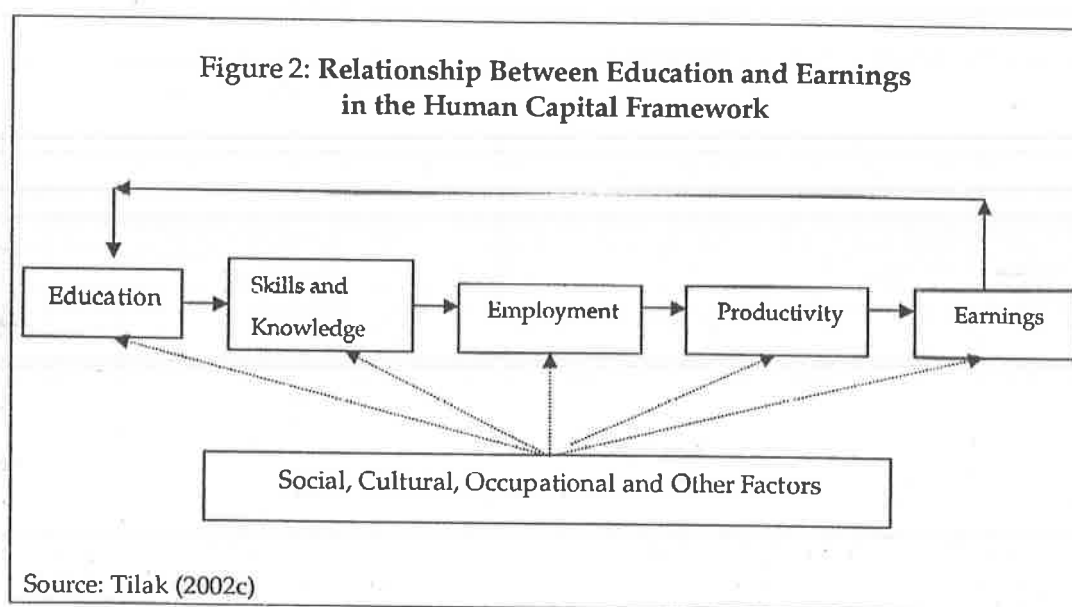
This mutually reinforcing relationship is also true both at macro level and also at household levels -- including at the individual, the family, the community,

the region and the wider nation-society levels. At the micro level, illiterate and less educated individuals or households are less productive, join less paying occupations, thus earn less, and remain at very low levels of living, mostly below poverty. At macro level also, nations with illiterate and less educated masses cannot progress, increase their output substantially, and as a result remain at low standards of living. Income poverty of the households does not allow them to make adequate investments in education; and low or zero levels of investment in education accentuate their income poverty. The most effective way of breaking this relationship is to begin 'educational reconstruction' (Education Commission, 1966).

It is now widely realised that investment in human capital is one of the important keys to break this cycle, to reduce income poverty – both absolute poverty and relative poverty, in addition to, of course, eliminating poverty of education. This was recognised long ago by many. For example, Alfred Marshall (1920, pp. 138-39) stated: "Knowledge is our most powerful engine of production; it enables us to subdue Nature and force her to satisfy our wants..." In India Mokshagundam Visvesvarayya (1931) highlighted as long as in 1931 the pivotal role of education in economic welfare of the country and cautioned: "the economic future of India is placed in grave peril by the slow progress which mass education is making..." While there is a long tradition of economics that recognised the value of education in development (see Blaug, 1975), the importance of education in the well being of the nations is clearly recognised since the 'human investment revolution in economic thought', initiated by Theodore Schultz (1961). Schultz has not only demonstrated that education is an investment leading to human capital formation, but also emphasised and proved empirically that education and research would lead to 'increasing returns' even in agriculture, where all traditional thought has suggested that 'diminishing returns' must obtain in the area of agriculture. In the twenties of the last century, Perro Sraffa and Allvyn Young also emphasised that 'diminishing returns' is not inevitable, and that 'increasing returns' are possible, indeed are likely as a result of education, training, research and new production methods. The externalities, including dynamic externalities of education that cause increasing returns are again emphasised recently by Romer (1986) and Lucas (1988) among others. In India Rao (1964; see also 1970) and the Education Commission (1966) are first of its kind that had emphasised the links between education and development. Though the earlier research in India and abroad concentrated more on the role of

education in economic growth, the impact of education on poverty and well being of the masses was also clearly recognised and of late this began receiving more serious attention in the wider framework of human development.

Available research in the last couple of decades (e.g., Fields, 1980a, 1980b; Tilak, 1986, 1989a, 1994) clearly shows that education and poverty are inversely related: the higher the level of education of the population, the lower would be the proportion of poor people in the total population, as education imparts knowledge and skills that are associated with higher wages. A strong linear relationship between education and earnings is envisaged, as shown in Figure 2.

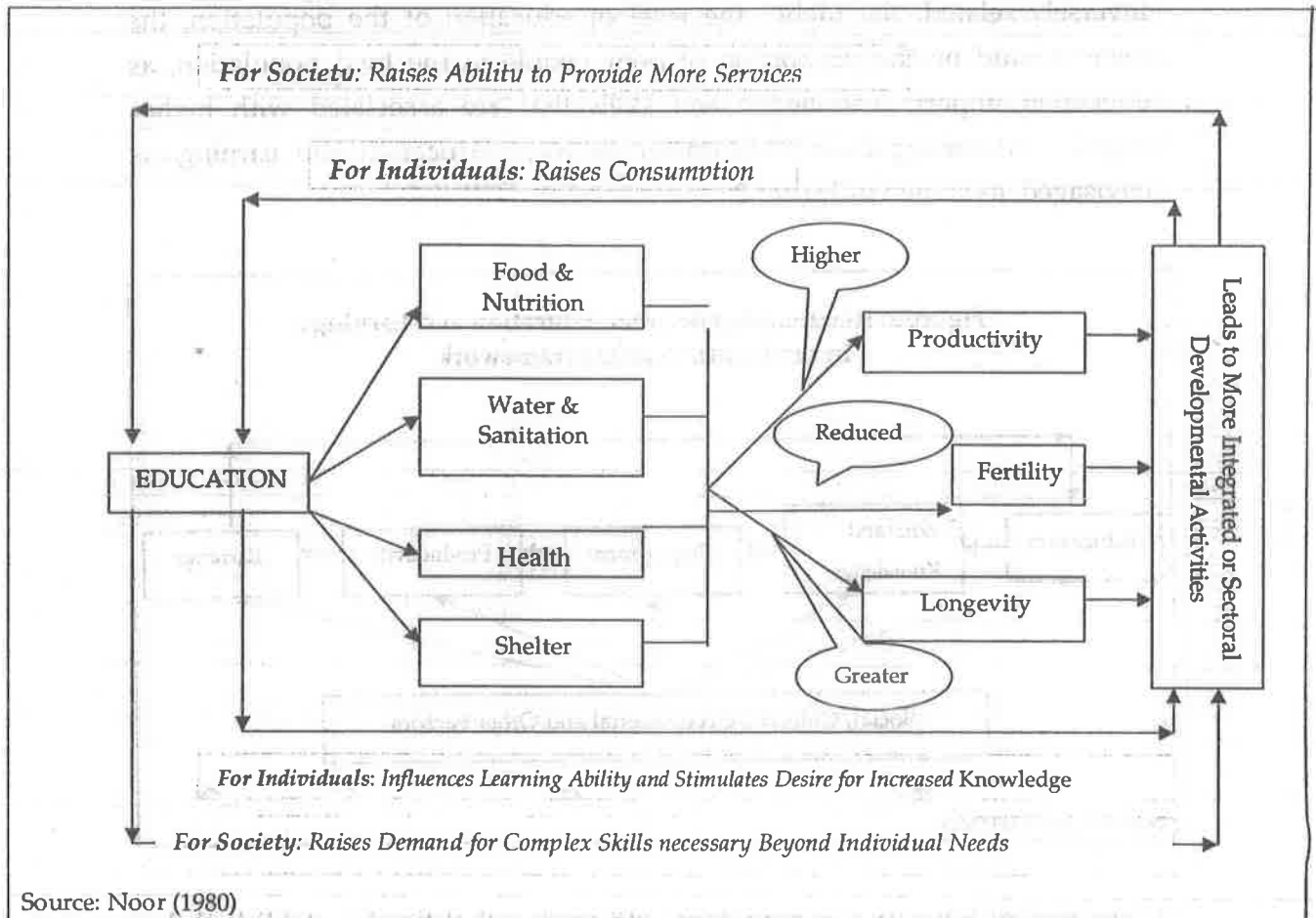


Economics of Education is abundant with studies that firmly established the correlation between education and earnings – earnings rising with increase in education levels, not rarely but almost universally and quite steeply and systematically, in case of general population and also of sub-groups of population – males, females, rural, urban, socially backward sections, etc. As Blaug (1972) noted, the universality of this relationship is well recognised beyond doubt (see Psacharopoulos and Tilak, 1992).

In addition to this direct effect of education, the effect of education on poverty could be indirect through its fulfillment of basic needs like better utilisation of health facilities, shelter, water and sanitation, and its effects on

behaviour of women on decisions relating to fertility, family welfare and health etc., (Noor, 1980; Cochrane, 1988; Jeffery and Basu, 1996) which in turn enhance the productivity of the people and yield higher wages, taking them above the poverty line.

Figure 3: Education as a Critical Factor in the Basic Needs Framework



Source: Noor (1980)

The relationship between poverty and education is further strengthened, as education and other basic needs reinforce each other (Noor, 1980; Tilak, 1989b; Unesco-PROAP, 1998). In fact, education is recognised as an important basic need fulfillment of which helps in the fulfillment of others.

Poor households and nations are also characterised by high mortality rates, poor health conditions, etc. The role of education in reducing relative income inequalities is also found significant. It is also noted that, thanks to education, especially of women, a society could move out of poverty traps and progress into prosperity. It has also been observed historically that

education helps to broaden the base of understanding among people, and thereby helps to strengthen the democratic process, which in turn could pave the way to the promotion of sustainable development, through a better understanding of the intimate relationships between environment, ecology and sustainable development. Thus by strengthening democratic forces, education would help in promoting sustainable human development, making rapid social progress, including abolition or containment of the elite's discretionary power (see Cohen, 1998, p. 15).

Micro level investigations have highlighted the role of education in reducing poverty. The incidence of poverty is the largest among the illiterate households, and it declines consistently by increasing levels of education in developing countries (Tilak, 1994). For example, nearly all of the poor in Pakistan were illiterate; and in Thailand, almost 99 per cent of the poor had no education or less than middle/secondary education (Fields, 1980a, pp. 158-60). Poverty was found varying inversely with education and training and household income in India (Harris, Kannan and Rodgers, 1990, p. 102). In short, poverty is predominant among the illiterates and it is almost a non-existent phenomenon among the higher educated households. As Galbraith (1994) observed, there is "no well educated literate population that is poor, [and] there is no illiterate population that is other than poor." Education and incidence of income poverty are inversely related.

Thus, education is rightly regarded an important component of anti-poverty programmes in many developing countries. However, within education, the focus has been on primary education, including non-formal education and adult education (e.g., Coombs and Ahmed, 1974). Most of the available analytical research (e.g., Noor, 1980; World Bank, 1993; Barro, 1991) seemed to have concentrated on analysing the positive effects of literacy and primary education, and peripherally of secondary education (e.g., Barro and Salai-i-Martin, 1995; Lucas, 1988, Mankiw et al 1992; Barro and Lee 1993) on poverty and other aspects of social and human development like infant mortality, life expectancy, etc., and firmly concluded that literacy and primary education have significant effects on poverty reduction. Accordingly, the development efforts of the national governments, non-governmental organizations, and even international development community including the United Nations, UNESCO, UNDP, and UNICEF and bilateral aid organisations are also confined in the area of education to primary education as an instrument of poverty alleviation. For example, the Millennium

Development Goals of the United Nations that aim at poverty alleviation or the Poverty Reduction Strategy Papers, recommended by the World Bank refer to only primary education, and education of girls. Neither the researchers nor the policy makers have turned their attention to secondary or higher education in this regard. Very rarely the relationship between higher education and development, or even secondary education and development is analysed in detail and is well recognised. In stead, it is widely held that secondary and higher education is less poverty alleviating, and is not important for social development, income distribution, equity and development. It is only now, as King (2005) observes, some international organisations begin to turn their attention to post-basic education, realizing the connections between primary, secondary, higher education and development, and that goals relating to universal primary education or the Millennium Development Goals on poverty reduction cannot be reached by only targeting universal primary education.² It is however, not certain how influential these reports would be on future thinking on the relationship between post secondary education and development and on national and international policies on education development. After all, two such recent reports (Task Force on Higher Education and Society, 2000; World Bank, 2002a) or a major international event held by the UNESCO (1998) did not lead to any significant rethinking on the part of the international development community on the role of higher education in development.

Those few researchers who analysed the relationship between post primary education and development, did, however, find significant impact of education on growth (e.g., Benhabib and Spiegel, 1994; Petrakis and Stamatakis, 2002). After all, while primary education gives the basic three r's, rarely does it provide skills necessary for employment – self employment or otherwise that can ensure some wages and economic living. More over, most of the literacy and primary education programmes are also found to be not imparting literacy that is sustainable, so that children do not relapse into illiteracy. Secondly, primary and even elementary education is rarely treated as a terminal level of education. Thirdly, even if primary education imparts some valuable attributes, in terms of attitudes and skills and if primary education is able to take the people from below the poverty line to above the

² King (1995) essentially reviews three major international reports, viz., Commission for Africa (2005), UN Millennium Project (2005) and World Bank (2005: forthcoming), and also Sachs (2005).

poverty line, it is possible that this could be *just above* the poverty line, but not much above; and more importantly the danger of their falling below poverty line at any time could be high. On the other hand, it is secondary and higher education that consolidates the gains received from primary education; it is secondary and higher education that provides skills that could be useful in the labour market; it is secondary and higher education that can keep the people above poverty line without such a danger of falling back into poverty trap -- educational poverty or income poverty; and in fact, it is secondary and higher education that can take people to much above poverty line, by increasing the social, occupational and economic levels of the households. In all, this is secondary and higher education that forms a 'human capability' and 'human freedom' that Sen (1999) champions, a freedom that helps in attaining other 'freedoms'.

With this in background, the present paper aims at an examination of the relationship between post-elementary education and development, particularly poverty and other aspects of social and human development in India. It discusses an expanded concept of poverty that includes human poverty, more specifically education poverty, reviews the available evidence on the role of education more specifically that of post elementary education in development, provides some further fresh evidence on the same, and offers a short comment on education policy environment. The following section presents a brief idea of the problem of poverty and development in India, and the progress made in reduction in poverty. The section also lists some of the programmes launched by the Government of India for the reduction in poverty. It may be interesting to note that while primary education is an important component of the revised minimum needs programme of the government, primary or other levels of education do not figure explicitly anywhere in the anti-poverty programmes of the government. Section 3 reviews the education development in India, as it evolved over the last five decades after independence. Even after five decades of planning, one-third of the population are illiterate; elementary education is far from universal; vocational and technical education did not progress much, and higher education is also accessible to small fraction of the eligible youth of the country. Reviewing the literature, the contribution of education to increase in earnings and economic growth in India is briefly highlighted in section 4. Based on some of the recent research evidence on Asian region, section 5 provides further evidence on the contribution of higher education to

economic growth, technological change, and to improvement in social development indicators. Based on inter-state data, an analysis of the contribution of post-elementary education to poverty reduction and improvement in related dimensions of development such as infant mortality rate, and life expectancy is attempted in section 6. Despite the significant and significantly potential contribution of post elementary education to economic growth and reduction in poverty, education policy has been biased against secondary and higher education. This is highlighted in section 7. The concluding section provides a brief summary of the paper along with a few concluding observations.

It may be mentioned that the paper has a limited specific purpose. It does not aim at presenting an exhaustive account of education development and of education policies in India; nor does it analyse the relationship between education and various facets of development in any comprehensive way. Education does contribute significantly to economic, social, cultural, political and other aspects of development; but only some aspects of development are considered here. It is only an attempt to present some evidence to argue that it is not only literacy and primary education, but also secondary and higher education have important contribution to economic growth and development. It is possible that the later is more significant.

2. Poverty and its Reduction in India

Poverty eradication has been a key objective of India's development strategy. Both economic growth and the specific target of poverty eradication have been tied together as major development tools (Gupta, 1995). 'Growth with social justice' has been the main strategy of development since the beginning of the 1970s, though in recent years the relative focus tends to shift in favour of growth. 'Balancing of economic growth and social development' has been a difficult challenge. Along with strategies for growth a large number of poverty alleviation programmes have been launched, some of which originated in the 1960s.

As discussed earlier, poverty is a multi-dimensional concept and the most popular indicator of poverty is percentage of population living below poverty line. The poverty line defined as a minimum per capita consumption expenditure which could satisfy the basic calories needs of the individuals. So poverty is defined in terms of consumption expenditure. Following the pioneering works of Dandekar and Rath (1971), poverty is estimated using the rich household level data provided regularly by the National Sample Survey, by the Government of India accordingly using a head count ratio method, taking into the prices and the expenditure required to purchase the basket of goods that yields the minimum calories required. The basket includes food, fuel and light, housing, clothing and footwear, and miscellaneous items (see Sharma, 2004).

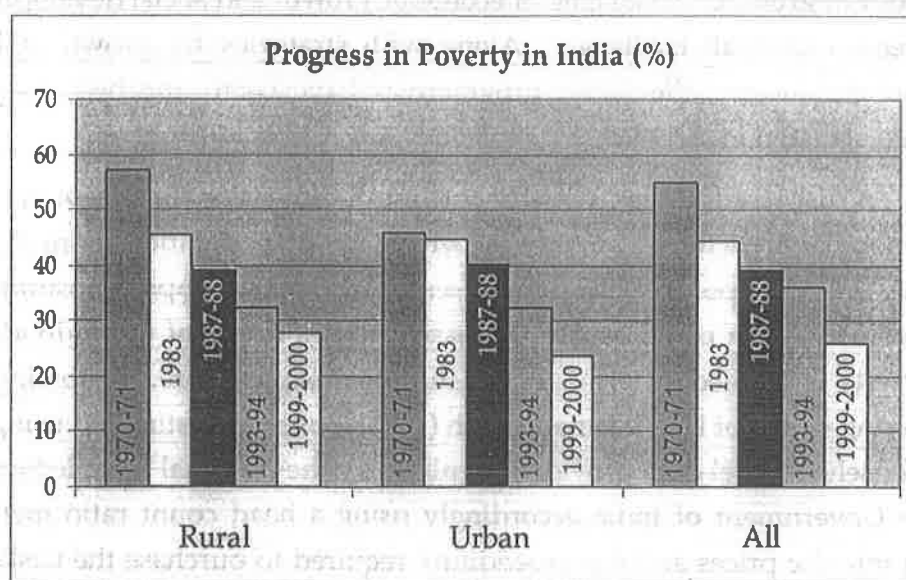
Table 1: Poverty Line in India (Rs per capita per month)		
	Rural	Urban
1973-74	49.63	56.76
1983	89.50	115.65
1993-94	205.84	281.35
1999-2000	327.56	454.11
Source: <i>National Human Development Report 2001</i>		

The poverty line is also continuously estimated and updated separately for rural and urban areas. Currently a minimum level of calories required is estimated as 2400 and 2100 per person per day in rural and urban areas respectively and the minimum level of consumption expenditure required at the national level is Rs.328 per head per month in rural areas and Rs.454 in urban areas. The estimates obviously differ for different states, as they are

based on the value of money in the different states.

India has made significant progress in reduction in poverty over the years. Percentage of population below the poverty line has declined from 55 per cent in 1970-71 to 26 per cent by 1999-2000, the latest year for which poverty estimates are available, as shown in Figure 4.

Figure 4



But still 260 million people are estimated to be living below the poverty line – 193 million in rural areas and 67 million in urban areas some of whom may be living under 'chronic poverty' in 1999-2000, as shown in Table 2. During the 30 year period, i.e., between 1971 and 1999-2000, in absolute numbers the number of people below poverty could be reduced by a meagre 40million.

Table 2: Incidence of Poverty in India (population below poverty line)						
	Rural		Urban		Total	No of People
	%	No (mln)	%	No (mln)	%	No (mln)
1970-71	57.30	251.70	45.90	50.10	55.10	301.80
1983	45.65	251.90	44.79	70.90	44.48	322.89
1987-88	39.10	231.40	40.10	78.70	39.30	310.10
1993-94	32.27	244.03	32.36	76.33	35.97	320.36
1999-2000	27.89	193.24	23.62	67.01	26.10	260.25
Source: National Human Development Report 2001						

Increase in population has been a big hindrance to several development efforts, including to the poverty alleviation programmes. It is important to note, according to these official estimates, that a substantial decline in the number of poor has happened only between 1993-94 and 1999-2000.

Table 3: Poverty (% of People Living Below Poverty Line) in India, by States									
State	1983			1993-94			1999-00		
	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total
Andhra Pradesh	26.53	36.30	28.91	15.92	38.33	22.19	11.05	26.63	15.77
Arunachal Pradesh	42.60	21.73	40.88	45.01	7.73	39.35	40.04	7.47	33.47
Assam	42.60	21.73	40.47	45.01	7.73	40.86	40.04	7.47	36.09
Bihar	64.37	47.33	62.22	58.21	34.50	54.96	44.30	32.91	42.60
Goa	14.81	27.00	18.90	5.34	27.03	14.92	1.35	7.52	4.40
Gujarat	29.80	39.14	32.79	22.18	27.89	24.21	13.17	15.59	14.07
Haryana	20.56	24.15	21.37	28.02	16.38	25.05	8.27	9.99	8.74
Himachal Pradesh	17.00	9.43	16.40	30.34	9.18	28.44	7.94	4.63	7.63
Jammu & Kashmir	26.04	17.76	24.24	30.34	9.18	25.17	3.97	1.98	3.48
Karnataka	36.33	42.82	38.24	29.88	40.14	33.16	17.38	25.25	20.04
Kerala	39.03	45.68	40.42	25.76	24.55	25.43	9.38	20.27	12.72
Madhya Pradesh	48.90	53.06	49.78	40.64	48.38	42.52	37.06	38.44	37.43
Maharashtra	45.23	40.26	43.44	37.93	35.15	36.86	23.72	26.81	25.02
Manipur	42.60	21.73	37.02	45.01	7.73	33.78	40.04	7.47	28.54
Meghalaya	42.60	21.73	38.81	45.01	7.73	37.92	40.04	7.47	33.87
Mizoram	42.60	21.73	36.00	45.01	7.73	25.66	40.04	7.47	19.47
Nagaland	42.60	21.73	39.25	45.01	7.73	37.92	40.04	7.47	32.67
Orissa	67.53	49.15	65.29	49.72	41.64	48.56	48.01	42.83	47.15
Punjab	13.20	23.79	16.18	11.95	11.35	11.77	6.35	5.75	6.16
Rajasthan	33.50	37.94	34.46	26.46	30.49	27.41	13.74	19.85	15.28
Sikkim	42.60	21.73	39.71	45.01	7.73	41.43	40.04	7.47	36.55
Tamil Nadu	53.99	46.96	51.66	32.48	39.77	35.03	20.55	22.11	21.12
Tripura	42.60	21.73	40.03	45.01	7.73	39.01	40.04	7.47	34.44
Uttar Pradesh	46.45	49.82	47.07	42.28	35.39	40.85	31.22	30.89	31.15
West Bengal	63.05	32.32	54.85	40.80	22.41	35.66	31.85	14.86	27.02
Andaman & Nicobar Is.	53.99	46.96	52.13	32.48	39.77	34.47	20.55	22.11	20.99
Chandigarh	23.79	23.79	23.79	11.35	11.35	11.35	5.75	5.75	5.75
Dadra & Nagar Haveli	14.81	27.00	15.67	51.95	39.93	50.84	17.57	13.52	17.14
Delhi	7.66	27.89	26.22	1.90	16.03	14.69	0.40	9.42	8.23
Lakshadweep	39.03	45.68	42.36	25.76	24.55	25.04	9.38	20.27	15.60
Pondicherry	53.99	46.96	50.06	32.48	39.77	37.40	20.55	22.11	21.67
All-India	45.65	40.79	44.48	37.27	32.36	35.97	27.09	23.62	26.10
Source: National Human Development Report 2001									

Neither the progress, not the current level of poverty is uniform across all the states in India. The inter-state differences are large in the poverty ratio, as the figures in Table 3 show. Among the major states, Punjab, Jammu and Kashmir, Delhi, Himachal Pradesh and Goa are much better off with the poverty ratio being in single digit than the rest of the country. There are wide variations between several states in the progress made in reducing poverty as well. For example, in Orissa, Bihar, West Bengal and Tamil Nadu the poverty ratio used to be above 50 per cent of the total population were poor in 1983; West Bengal and Tamil Nadu could reduce the ratio by about half by 1999-2000; while the ratio is still high, above 40 per cent in Bihar and Orissa. Rural Orissa is the poorest in the country.

Government has laid emphasis on employment generation as an important instrument of poverty alleviation and it has adopted a package of anti-poverty programmes, that include provision of basic minimum needs, provision of opportunities (skill and training) for self employment and employment in public and private sectors, specifically in rural areas through launching of road construction programmes, and similar other programmes particularly aiming at the welfare of the poorest of the poor. Employment guarantee scheme is one such programme that is being planned at the national level. Some programmes also aim at helping the poor in forming self help groups. Some programmes aim at provision of free housing facilities, and provision of food (grains) for work.³ Some of the programmes that have been in operation and are continued during the tenth five year plan are as follows:

- Integrated rural development programmes that includes provision of subsidy and bank credit for productive employment opportunities
- Training rural youth for self employment (TRYSEM)
- Development of Women and Children in Rural Areas (DWACRA)
- Supply of Improved Toolkits to Rural Artisans
- Drought Prone Area Programme
- Self employment and Wage employment programmes
- Creation of Rural Infrastructure (roads, etc.,) for employment generation
- Employment assurance schemes,

³ See Jain (1995) for a general review of many of these programmes on poverty alleviation and employment generation.

- Social Security programmes – national social assistance programme – that include old age pension scheme, family and maternity benefit schemes, food and nutrition security, public distribution system etc
- Land reforms

Some programmes are targeted at women, socially disadvantaged groups scheduled tribes and other special groups, and some are universal programmes without any specific targeting.

In addition, the government of India had also launched a programme of provision of revised minimum needs since the fifth five year plan, some components of which are overlapping with the anti-poverty programmes.. They include provision of safe drinking water, primary health care, primary education, public housing assistance, provision of midday meals, connectivity to all unconnected villages and habitations, public distribution system, etc. Village development programmes launched in the ninth five year plan period include six important components, viz., primary health, primary education, rural shelter, rural drinking water and nutrition, and rural electrification. During the ninth plan period, special programmes to ameliorate the conditions of the urban slum dwellers living below poverty line were also launched.

Table 4: India: Human Development Indicators, 2002

Population (million)	1049.5
Life Expectancy (years)	63.7
Adult Literacy (%)	61.3
Combined Gross Enrolment Ratio (Primary, Secondary and Higher) (%)	55
GDP per capita (PPP \$)	2670
Human Poverty Index	31.4
% Population below Poverty Line	
< US\$ 1	34.7
< US\$ 2	79.9
< National Poverty Line	28.6
Human Development Index	0.595
Human Development Index Rank	127
Gender Development Index	0.572
Gender Development Index Rank	103
Source: <i>Human Development Report 2004</i> .	

A review of these programmes is not an objective of this paper. But to conclude, despite some of these programmes, nearly one-fourth of the

population is below the poverty line and the country ranks very poorly in terms of human development index. It ranks 127th among the 177 countries in 2004 (UNDP. 2004). Infant mortality rate is quite high 64 per thousand infants born (2002); and the life expectancy is estimated to be only 64 years (2001-06). In terms of economic growth also, it does not rank high; its GDP per capita (PPP) is US\$ 2670 in 2002, though the rate of growth of the economy is improving to be around 6-8 per cent. Some of the key human development indicators are given in Table 4.

Though in the minimum needs programme, primary education figures as an important programme, it must be noted that education is not planned and provided explicitly as an important strategy of reducing poverty. Secondary and higher education rarely figures in these programmes aimed at attacking poverty. Nevertheless, one can find a strong relationship between education and poverty and more importantly, the positive effect of education on reduction in poverty and improvement in economic growth, as we discuss later.



3. Education Development in India

The role of education in development has been recognised ever since the days of Plato. Education, Plato believed, is indispensable to the economic health of a good society, for education makes citizens 'reasonable men'. Since education has high economic value, Plato argued that a considerable part of the community's wealth must be invested in education. Major contribution to the discussion on the relationship between education and economic growth was made first by Adam Smith, followed by a long honourable tradition of classical and neo-classical economists until Alfred Marshall (1890) who emphasised that "the most valuable of all capital is that invested in human beings". However, "in line with the biased postwar approach it was largely forgotten" (Myrdal, 1968, p. 167), and no systematic study on the contribution of education to economic growth could be found in the literature, until Schultz's (1961) Presidential Address to the American Economic Association in 1960, which created what is later aptly described as "human investment revolution in economic thought" (Bowman, 1966). Schultz's pioneering research followed by a mammoth growth of research in the area of Economics of Education, and the untiring research has clearly established that education is not merely a consumption activity, but for the most part an investment. It leads to the formation of human capital, comparable to physical capital, making a significant contribution to economic growth.

Synchronising with the human investment revolution in economic thought, many countries around the world, and more particularly the newly independent developing countries expanded their educational systems and made heavy investments in education. The rates of growth of educational systems in many countries exceed the rates of economic growth. This is not surprising, as "during the process of economic modernisation the rate of increase in human capital is higher than that of reproducible physical capital" (Schultz, 1986, p. 5). India stands as an outstanding classic example of massive expansion of educational systems among the third world countries. In the post-independent India, particularly since the inception of the plan era (since 1951), an educational explosion has taken place, which may be described as an "educational miracle". The 'miracle' is particularly important when one examines in the context of the colonial legacy.

When the planning process was initiated in the independent India there was a huge legacy of colonial educational system. Mass education, comprising

of universal primary and upper primary education and adult education, was never a priority in the colonial educational policy, nor was of course secondary and higher education. The colonial rule transformed an 'intermediate' literate society into a predominantly illiterate society (Basu, 1982); 'the beautiful tree' (Dharampal, 1983) was uprooted; and the needs and prejudices of the colonial powers determined the basic structure, the shape and the ethos of the Indian educational system. Educational policy in India was clearly subservient to imperial economic policy. The colonial dependent economic relationships between Britain and India shaped the educational policies in British India. The policy of making India a raw material appendage and a market for British manufactured goods ruined the indigenous educational system with its great chronological depth.

As a result, India had to start, after independence, almost at scratch, and has made significant progress during the post-independence period. The Government of India has recognised the pivotal role of education in development. The Constitution of independent India (1951) had resolved to provide elementary education free to every one. It stated:

the State shall endeavour to provide, within a period of ten years from the commencement of this Constitution, for free and compulsory education for all children until they complete the age of fourteen years. (Article 45).

The government has accorded special importance to education not only in the country's Constitution but also in the five year plans. From the very first five year plan onwards, it was attempted to make education an integral part of development planning. Plan after plan incorporated a chapter each on education and science and technology, and highlighted their relationship with economic development. For example, the second five year plan (1951-56) stated,

"Economic development naturally makes growing demands on human resources and in a democratic set-up it calls for values and attitudes in the building up of which the quality of education is an important element" (Planning Commission, 1956, p. 500).

The third five year plan (1961-66) recognised more emphatically the versatile contribution of education to social and economic development:

"Education is the most important single factor in achieving rapid economic development and technological progress ... in all branches of national life

education becomes the focal point of planned development" (Planning Commission, 1961, p. 573).

It is, however, the Education Commission (1966) that stressed the relationship between education and national development clearly. Following this, the draft outline of the Fourth five year plan (1969-74) noted:

"Education as an investment in human resources plays an important role among the factors which contribute to economic growth. It secures returns in the form of skilled manpower geared to the needs of development ... both for accelerating economic development and for improving the quality of the society ..." (Planning Commission, 1969).

The fifth five year plan (1975-80) recognised education as "a key factor in production" (Planning Commission, 1974, p. 191). The subsequent plans and the policy statements (e.g., *National Policy on Education* 1968 and 1986 and revised 1992) laid special emphasis on the role of education as an important means of development, viewing education as a "crucial area of investment for national development and survival" (Government of India, 1986, p. 29). Elementary education is also an important component of *National Minimum Needs Programme* of the Five Year Plans. The Five Year Plans and the Annual Plans of the Government of India and of various states periodically spell out their strategies towards fulfilling the educational aspirations of the people. They laid stress on the promotion of education in the country. Specifically, they stressed the need for eradicating illiteracy altogether and to provide universal elementary education to all in the shortest possible time. They also laid special emphasis on vocational and technical education at secondary level and on improvement of quality and relevance in higher education. Equity in education by gender, caste and socioeconomic groups and reduction in regional disparities in education development have been some of the important objectives of educational planning in India. The policy goals remained the same over the years, though some of the strategies adopted in the earlier decades and currently are different, and the target dates of achievement of the goals have been changed.

The several committees and commissions constituted during the post independence period on education development have laid stress on the need for expansion of education. The Kothari Commission (1964-66) has highlighted the strong links between education and development. With the 42nd amendment to the Constitution in 1976, education, which was largely a state responsibility, was

brought into the 'concurrent list,' making a responsibility of both the union and the state governments. The 73rd and the 74th amendments to the Constitution had placed greater role on local bodies on the development of education, among others. Elementary education has been made a fundamental right with the 86th amendment to the Constitution in 2002. Several foreign aided projects are launched in primary education since the mid-1990s. Some of these efforts, including decentralization, specifically aimed at not only improving education situation, but also targeted at reducing poverty and empowerment of the poor.

Table 5 : Growth of Education in India

Table 5 : Growth of Education in India					
Year	Primary	Upper Primary	Secondary & Higher Secondary	Higher	
				University	Colleges
<i>Institutions</i>					
1950-51	209,671	13,596	7,416	27	578
1960-61	330,399	49,663	17,329	45	1,819
1970-71	408,378	90,621	37,051	82	3,277
1980-81	494,503	118,555	51,573	101	6,943
1990-91	560,965	151,456	79,796	184	5,748
2000-01*	638,738	206,269	126,047	254	10,152
2002-03*	651,382	245,274	137,207	304	11,146
<i>Enrolment</i>	in 10 million			in thousands	
1950-51	1.92	0.31	0.15	174	
1960-61	3.50	0.67	0.34	557	
1970-71	5.70	1.33	0.76	1956	
1980-81	7.38	2.07	1.10	2752	
1990-91	9.74	3.40	1.91	4924	
2000-01*	11.38	4.28	2.76	8399	
2002-03*	12.24	4.69	3.32	9516	
<i>Teachers (in thousands)</i>					
1950-51	538	86	127	24	
1960-61	742	345	296	62	
1970-71	1060	638	629	190	
1980-81	1363	851	926	244	
1990-91	1616	1073	1334	271	
2000-01*	1896	1326	1761	350	
2001-02*	1928	1488	1777		
* Provisional					
Source: <i>Selected Educational Statistics 2001-2002; Annual Report, UGC 2001-02</i> for enrolment and teachers in higher education.					

As a result of the policies and strategies adopted during the post-independence period, the education system in India got deepened and

widened as well.⁴

Today the education edifice in India is one of the largest ones in the world, with a network of more than one million institutions with 250 million students enrolled at various levels in 2002-03. The number of students in India outnumbers the total population of united Germany, England and Canada taken together. Nearly six million teachers are there in the schools and higher education institutions. According to the 2001 census, the effective literacy (of the age-group 7+) rate was 65 percent.

Such an expansion was inevitable, as the educational facilities available in the pre-independence period were very insignificant. Independence has created an unquenching thirst for knowledge resulting in an abnormal rise in social demand for education.

Secondly, building up a new socio-economic system after the end of the colonial rule required large scale manpower with varied skills, and so the government could not but expand education structure vertically. Public policy towards equality in education and recognition of education as having a significant effect on reduction in poverty and improvement in income distribution led to the expansion of education horizontally. The rise in the individual earnings created further growth in demand for education. All this led to a massive expansion of the system. The progress is not only in quantitative terms, but is also visible with respect to quality and equity aspects.

Despite huge expansion of the system, the progress achieved has not been satisfactory, whether it is with respect to literacy, or elementary education, or secondary or higher education, and whether it is with respect to quantity, quality or equity. Paradoxically along with the remarkable educational expansion, one finds a long array of modest goals yet unaccomplished.

Elementary Education

There has been a spectacular growth in elementary education in India during the post-independence period. Enrolments in elementary education have increased by seven times from 22.3 million in 1950-51 to 170 million in 2002-03. Official estimates on gross enrolment ratios have increased, from 42.6 per cent in primary and 12.9 per cent in upper primary education in 1950-51 to

⁴ See Tilak (1996b) for a detailed account of the achievements and failures of the Indian education system during the post-independence period.

96 per cent in case of primary education and 56 per cent in case of upper primary education by 2002-03, both of which together constitute the Constitutional goal of universal elementary education. The overall gross enrolment ratio in elementary education was 81 per cent in 2002-03. The net enrolment ratio is estimated to be a little less than this. All this may represent a very significant growth in elementary education. But elementary education is also associated with very serious problems of high rates of dropout, high pupil-teacher ratio, poor quality of education, and low levels of student achievement. In sum, universalisation of elementary education, a goal set by the Constitution to be achieved within a ten-year frame after the Constitution was framed, still eludes.

Secondary and Higher Education

Secondary and higher education also experienced impressive quantitative growth: enrolments in secondary (including senior secondary) education have increased from 1.5 million in 1950-51 to 33 million in 2002-03. There were in 2002-03, 137 thousand secondary/senior secondary schools with about 1.8 million teachers. But despite seemingly impressive growth in enrolments, the size of enrolment is not proportionate to the population. For instance, only 35 per cent of the children of the age-group 14-17, according to official estimates, are enrolled in secondary education in 2002-03, compared to above 90 per cent in developed countries and 40-50 per cent in several developing countries. Inequalities by gender, caste and economic groups are high. Secondary education rarely serves as a meaningful effective terminal level of education.

The most significant setback in secondary education refers to the growth of vocational and technical education at snail's pace, though development of technical education as it relates to industrial development has been one of the foremost long term national tasks of development in India, as proposed by the Radhakrishnan Commission (1948) and the Mudaliar Commission (1952) immediately after independence; and though the government desired to offer vocational and technical education to 10 per cent of the students in higher secondary education by 1990 and to 25 per cent by 1995. But vocational education has not received any serious attention of anyone, partly because of the need for heavy investments on the one hand, and lack of sufficient demand for such education on the other. Vocational education particularly in secondary

schools did not really take-off, as it was planned to be of second rate one, meant for the poor and as a terminal one having inter-connectivity neither with higher education nor with industrial or agricultural sector. It was also viewed as a strategy to reduce demand for higher education. But it has served no purpose, as it did not take-off at all. It did not take off, partly because adequate investments are not made. Vocational education is costly, costlier than general secondary education. Employment opportunities have not been particularly better for vocational school graduates and as a result, economic rates to return to vocational education were generally less than those to secondary general education (see Tilak, 1988a). This would explain lack of sufficient demand for vocational education. However, in recent years, a number of vocational courses have been introduced in the undergraduate level in the colleges. Secondly, some kind of connectivity of vocational school education with post secondary education is also enabled, giving a chance to the vocational school graduates to go for higher education. Yet formal vocational school system has not grown much. But vocational and technical skill training is also offered in postsecondary institutions like industrial technical institutes and polytechnics. While they offer job-relevant skills, they are also considered as second best choice for many.

Higher education in India has expanded very fast during the post-independence period, though in the recent past, the relative growth rates have fallen. India has an elaborate network of higher education institutions – nearly 300 universities (and equivalent institutions) and 13,000 colleges offering first degree and post graduate courses to more than 9 million students. At the time of inception of planning in the country, i.e., in 1950-51 there were only 0.2 million students in higher education enrolled in 27 universities and less than 600 colleges. During the second to the sixth five year plan period higher education has grown reasonably well with increasing attention being paid to higher education, and rising allocations of public resources being made available. But from the seventh Five Year Plan onwards higher education was given a poor treatment. This resulted in erratic growth of higher education, affecting the quality, relevance and excellence in higher education. Inequalities in access to higher education by gender, by caste and religion are high. Inter-institutional variations in quality of higher education are also striking, some institutions being comparable to the best in the world, and many suffering from serious erosion in every respect.

On the whole, in higher education, a sector characterised by rapid rate of growth in numbers, 8-9 per cent of the relevant age group population are enrolled, a proportion which is much less than the corresponding proportion in other developed and developing countries.⁵ Secondly, a large proportion – about four-fifths of the enrolments in higher education are at under-graduate level. Students in post-graduate and research studies are very few. Thirdly, about 40 per cent of the students are enrolled in Arts courses, another one fifth each in commerce and sciences (natural and physical sciences). Other disciplines account for small proportions. In recent years, however, there has been a rapid growth in demand for engineering, management and information technology related courses of study. Fourthly, though the enrolment ratio is not high, in terms of numbers the output is very large. In terms of the scientific and technical manpower, India could become the third largest reservoir in the world and could even export its manpower to the advanced countries. Compared to the situation that the country inherited from colonial rulers about half a century ago, the current situation marks a phenomenal expansion of the system.

India has a huge stock of science and technology manpower, consisting of scientists and engineers. But the myth of the third largest stock of scientific and technical manpower in the world stands exploded if one carefully examines the quality of the manpower and their utilization (Tilak, 1997a). The stock is not so huge to match the requirements of the economy. Any standardised international comparisons of the stock of science and technology manpower would not make any tall claims tenable. For example, for every one million population, there are only about 130 scientists/engineers in India in 1990s, while in many other countries the corresponding figure is 10-30 times higher. The stock of manpower is also made of first graduates (in sciences and engineering). Post-graduates are few; and doctorates are fewer. This reflects the 'quality' of the science and technology manpower India has. The share of the scientific and technical manpower in the volume of the educated unemployed is high.

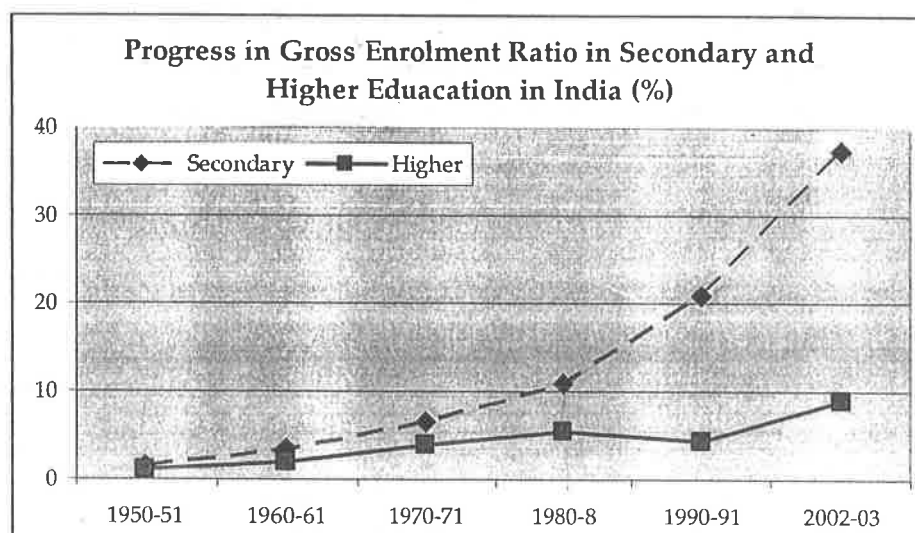
The massive expansion of higher education has, however, contributed to the phenomenon of what can be called *democratisation* of higher education. Presently a large number of students from lower socio-economic strata

⁵ For example, the corresponding ratios are above 70 per cent in USA and Canada, more than 30 per cent in South Korea and several European countries, and more than 20 per cent in several developing countries. About 20 per cent enrolment ratio seemed to be a threshold level for any country to become a developed country (Tilak, 1997b).

constitute a sizeable proportion in the total enrolments in higher education. One-third to 40 per cent of the enrolments in higher education belongs to lower socioeconomic strata, compared to the extremely elitist system inherited from the colonial rulers. Women students form currently about 40 per cent of the total enrolments. These are no mean achievements for a developing country. These achievements can be attributed, *inter alia*, to policies of affirmative action in the form of reservations in admissions, public subsidies and post-metric scholarships for weaker sections, etc. The emerging open learning systems, comprising of traditional methods of correspondence courses, and also modern methods of distance education also contribute significantly to 'massification' of higher education, though a high degree of inequalities does persist between several states, between various groups of populations, and between several institutions of higher education, besides different kinds of imbalances between different areas of study. Democratisation of higher education can also be expected to have a strong positive effect on social mobility and on poverty reduction.

On the whole, to sum up, the quantitative growth of educational system in India is very impressive. But at the same time the progress has been far from satisfactory. The gross enrolment ratio in secondary education is around 35 per cent and that in higher education less than 9 per cent.

Figure 5



Secondly, inter-state variations are very high in the enrolment ratio both in

case of secondary and higher education. For example, the ratio in secondary education is 17 per cent in Bihar, while it is about 70 per cent in Himachal Pradesh and Pondicherry; similarly in case of higher education the ratio is as high as 29 per cent in Chandigarh, but less than five per cent in Jammu and Kashmir and Nagaland.

Table 6: Gross Enrolment Ratio in Secondary and Higher Education, 2002-03

Year	Secondary (IX-XII/14-18)	Higher (18-24)
Andhra Pradesh	40.12	9.51
Arunachal Pradesh	38.14	6.37
Assam	29.65	8.67
Bihar	17.39	7.30
Chattisgarh	31.13	7.27
Goa	63.04	13.47
Gujarat	40.20	9.65
Haryana	47.52	10.56
Himachal Pradesh	68.97	12.76
Jammu & Kashmir	33.38	4.95
Jharkhand	20.71	8.12
Karnataka	37.95	9.92
Kerala	62.24	7.66
Madhya Pradesh	30.61	7.77
Maharashtra	53.08	12.30
Manipur	51.32	13.19
Meghalaya	32.61	10.94
Mizoram	40.61	9.51
Nagaland	13.54	4.33
Orissa	31.09	8.71
Punjab	39.12	8.53
Rajasthan	22.29	8.77
Sikkim	32.83	6.29
Tamil Nadu	55.15	10.91
Tripura	36.89	5.84
Uttar Pradesh	36.52	7.03
Uttaranchal	56.31	12.25
West Bengal	30.37	8.21
Chandigarh	64.16	28.68
Delhi	49.71	10.94
Pondicherry	70.68	17.88
All India	37.52	8.97

Source: *Selected Education Statistics, 2002-03*

In sum, the level and pace of development of education is finally reflected in the stock of educated population. The educational levels of the population are not satisfactory: the distribution of population by educational levels is skewed largely in favour of illiterates. According to the NFHS surveys, of the total population in India more than one-third are illiterate; 19 per cent were just literate with no (or incomplete) formal primary schooling; and 16.5 per cent had completed primary schooling in 1998-99. Less than nine per cent of the population had schooling above high school level. In rural India, the higher educated population consisted of less than five per cent of the total population.

Table 7: Distribution of Population by Educational Levels in India, 1998-99							
Category	Percentage of population with						Mean Years of Schooling
	Illiterate	Literate but did not completed primary	Primary complete	Middle complete	High school complete	Higher secondary complete and above	
<i>Total</i>							
Male	25.5	21.1	18.4	13	10.7	11.2	5.3
Female	48.6	17.1	14.5	8.1	6	5.6	3.4
Total	36.9	19.2	16.5	10.6	8.4	8.4	4.4
<i>Urban</i>							
Male	12.5	17.2	18.2	14.6	15.6	21.9	7.2
Female	27.8	16.4	17.9	12	11.5	14.3	5.5
Total	19.9	16.8	18.1	13.3	13.6	18.2	6.4
<i>Rural</i>							
Male	30.5	22.6	18.4	12.5	8.9	7.1	4.6
Female	56.3	17.4	13.2	6.7	4	2.4	2.6
Total	43.3	20	15.9	9.6	6.5	4.7	3.6

Source: National Family Health Survey (IIPS, 2000)

Population with above secondary education constitutes barely 16.8 per cent of the total in 1998-99. The progress between 1992-93 and 1998-99 is not much impressive, as can be noted from Table 8. The figures represent a very small increase.

Table 8: Population with Secondary Education and above									
Year	Rural			Urban			Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
1992-93*	3.1	0.7	1.9	13.9	7.7	10.9	6.1	2.6	4.4
1998-99**	7.1	2.4	4.7	21.9	14.3	18.2	11.2	5.6	8.4

* Above High School **Higher Secondary Complete and above

Source: IIPS (1993, 2000)

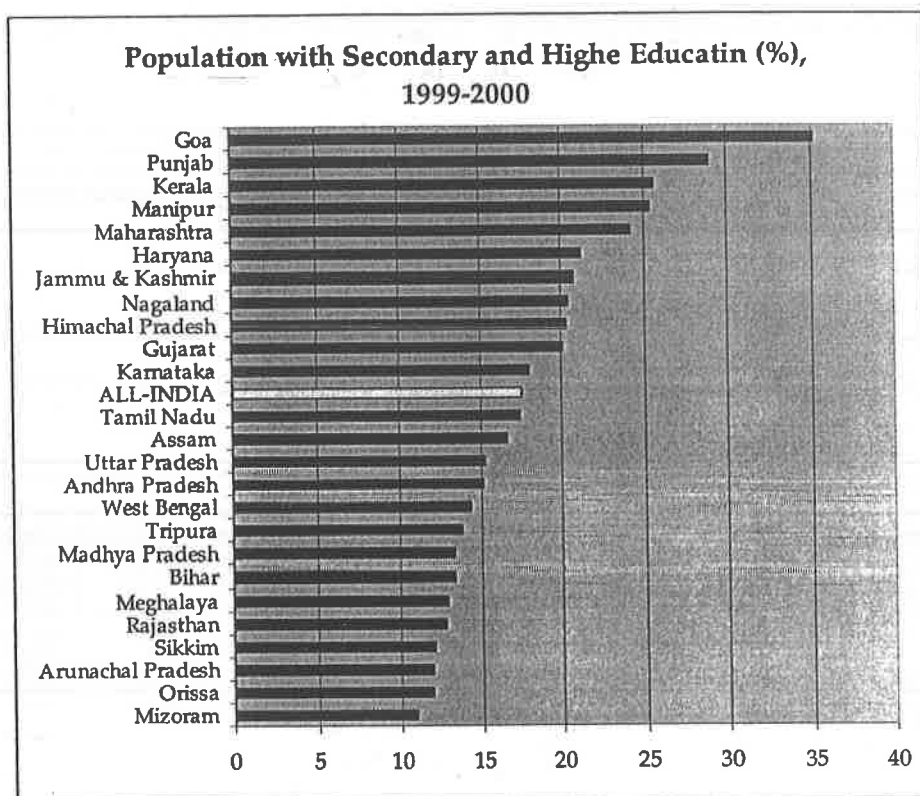
Table 9 presents the secondary higher education attainment ratios for various states in India in 1995-96 and 1999-2000. They are also presented separately for rural and urban areas.

Table 9: Population with Secondary and Above Education (%)					
	1995-96		1999-2000		
	Rural	Urban	Rural	Urban	Rural+Urban
Andhra Pradesh	7.9	35.8	7.1	26.0	15.2
Arunachal Pradesh	5.7	41.6	8.2	30.2	12.0
Assam	14.2	39.2	9.0	32.1	16.7
Bihar	10.0	35.7	6.7	24.9	13.3
Goa	33.3	39.4	25.9	36.6	35.2
Gujarat	12.6	34.7	9.4	28.2	20.1
Haryana	14.2	43.4	12.8	27.6	21.3
Himachal Pradesh	16.9	56.1	16.6	41.5	20.4
Jammu & Kashmir	14.2	40.1	11.1	30.0	20.8
Karnataka	10.9	38.1	9.4	33.2	18.0
Kerala	23.4	33.3	19.7	27.7	25.6
Madhya Pradesh	6.7	33.7	5.0	23.8	13.3
Maharashtra	14.0	39.5	10.5	29.2	24.2
Manipur	20.1	43.7	17.4	36.2	25.4
Meghalaya	8.0	45.5	3.0	34.5	12.9
Mizoram	3.3	25.3	10.6	23.8	10.9
Nagaland	14.2	35.4	15.7	32.6	20.5
Orissa	8.6	32.3	6.1	22.4	11.9
Punjab	22.4	43.0	14.6	30.9	29.0
Rajasthan	7.4	29.6	4.9	23.5	12.8
Sikkim	9.0	42.1	9.4	27.5	12.1
Tamil Nadu	10.2	32.2	11.1	28.0	17.5
Tripura	10.3	39.5	8.7	23.5	13.8
Uttar Pradesh	11.0	36.4	7.8	22.0	15.3
West Bengal	7.6	31.3	6.3	27.9	14.4
Source: NSSO (1997, 2001)					

Inter-state variations and also rural-urban differences are quite marked. While states like Mizoram, Orissa, Arunachal Pradesh, Meghalaya, Bihar, Madhya Pradesh, Tripura and West Bengal figure at the bottom with less than 15 per cent of their population having secondary and above education, the corresponding proportion is the highest in Goa with 35 per cent. Punjab and Kerala are also at the top with more than 25

per cent of the adult population being educated secondary and above level. Rural-urban differences seem to be extremely sharp in several states.

Figure 6



We also find very striking differences by economic groups of population, in not only enrolment ratios, but also in the stock of population with secondary and higher education. As shown in Table 10, the ratio at secondary, higher secondary and higher levels of education sharply rises with rising levels of household economic status. In fact among the poorest quintile group in rural areas there are no post graduates at all.

In short, though the mean years of schooling of population, a summary statistic of education development, in India has increased from 1.78 in 1971 to 2.35 in 1981 (see Tilak, 1994) and from 3.7 years in 1992-93 to 4.4 in 1998-99, it is still very low, as in quite a few advanced countries the corresponding figure is above ten; and in many other developing and developed countries it is above five (UNDP, 1992); and the variations in the mean years of schooling is also high between rural and urban areas and they are more striking between males and

females. The increase in mean years of schooling has been very small. The absolute levels, as well as the improvements in the educational levels of the population are much lower than the corresponding figures in many developed and even developing countries.

Table 10: Adult Population (age: 15 and above) with Secondary and Higher Education, by Economic Groups, 1995-96						
Quintile Groups	Secondary	Higher Secondary	Diploma/certificate	Graduate	Post Graduate and above	Total
<i>Rural</i>						
00-20	2.4	0.8	0.0	0.6	0.0	3.8
20-40	3.9	1.3	0.1	0.6	0.1	6.0
40-60	4.9	1.8	0.1	0.7	0.1	7.6
60-80	7.3	3.0	0.1	1.4	0.1	11.9
80-100	12.2	5.1	0.6	3.4	0.8	22.1
Total	6.5	2.6	0.2	1.4	0.2	10.9
<i>Urban</i>						
00-20	6.4	2.9	0.3	1.5	0.3	11.4
20-40	11.4	5.0	0.4	3.8	0.5	21.1
40-60	15.5	7.3	0.6	5.5	0.9	29.8
60-80	20.0	11.4	1.1	10.1	1.9	44.5
80-100	20.8	15.5	1.9	21.8	5.4	65.4
Total	15.4	8.9	0.9	9.2	2.0	36.4
<i>Total</i>						
00-20	3.4	1.3	0.1	0.8	0.1	5.7
20-40	5.9	2.3	0.2	1.5	0.2	10.1
40-60	7.6	3.2	0.2	2.0	0.3	13.3
60-80	10.6	5.2	0.4	3.6	0.6	20.4
80-100	14.4	7.7	0.9	8.1	2.0	33.1
Total	8.8	4.2	0.4	3.5	0.7	17.6

Source: NSSO (1997)

All these figures reveal very clearly that the extent of education poverty is very high in India, and the education poverty has obvious relation to economic poverty.

Intra-Sectoral Priorities in Education

The government has not placed equal priority to various levels of education. The post-independence period can be divided into four phases depending on the relative priorities accorded to various sectors of education: phase I: 1951-56 (the first five year plan period), phase II: 1956-69 (the period covering the second and the third five year plans, and the annual plans), phase

III: the post-1968 *Policy* period up to 1980, or simply 1969-1986, and phase IV: the post-1986 (*Policy*) period. Phase I witnessed a substantial part, nearly three-fifths, of the total plan educational resources, being allotted to elementary education, i.e., high priority was given to elementary education and a low priority to higher and technical education. The first five year plan also focused more on agricultural development. Phase II, specifically the second five year plan marked the beginning of a substantial increase in the allocation to secondary and higher education. It may also be noted that the overall developmental priorities also changed with the beginning of the second five-year plan. Relative emphasis shifted from development of agricultural sector in favor of development of industrial sector. Industrial development requires manpower, and secondary and higher education was looked upon for the supply of manpower. Accordingly, expenditure on secondary education was doubled from 13 per cent of the total allocation to education in the first plan to 19 per cent and doubling of allocation of higher education from nine to 18 per cent. The priority given to secondary education remained more or less at the same level until the sixth plan. The share of higher education reached a proportion of 24 per cent by 1967-68. Phase III, i.e., period after 1969 showed a slight reversal of these trends. The proportion of elementary education showed an increasing trend and that of university and technical education showed a gradual decline. This may be attributable partly to the Education Commission's (1966) concerns, and the *National Policy on Education 1968* that laid emphasis on elementary education on the one hand, and partly due, on the other hand, to the growth of educated unemployment, the mismatches in the labor market, and the resultant social unrest. 1986 marks the beginning of the renewed emphasis on elementary education, with the formulation of the *National Policy on Education (1986)*, and with the 'operation blackboard' and similar other programmes launched by the union and state governments.⁶ The allocation to elementary education was stepped up significantly during the seventh five-year plan, and the eighth, ninth and the tenth five-year plans continued to lay the same emphasis on elementary education. In the ninth plan also elementary education was given a high priority.

Besides the *National Policy on Education 1986*, international environment, particularly the Jomtien conference in 1990, and the Dakar conference in 2001

⁶ Mid-1980s is also the period when the World Bank emphasized the reduction in poverty as a major goal, and the role of primary education therein. It was followed by the Education For All conference at Jomtien in 1990.

on Education for All (EFA), and the beginning of the flow of external assistance for primary education, also have been responsible for the increase in priority for elementary education.

Table 11: Intra-Sectoral Allocation of Plan Expenditure in Education in the Five Year Plans in India
(Rs. in 10 million)

Five Year Plan	Eley*	Adult	Secy	Higher	Technical	Grand Total	% of Total Plan Outlay
First	85 (56)	5 (3)	20 (130)	14 (9)	20 (13)	153 (100)	7.86
Second	95 (35)	4 (1)	51 (19)	48 (18)	49 (18)	273 (100)	3.83
Third	201 (34)	2 (0.3)	103 (18)	87 (15)	125 (21)	589 (100)	6.87
Annual Plans**	75 (24)	..	53 (16)	77 (24)	81 (25)	322 (100)	4.86
Fourth	239 (30)	6 (1)	140 (18)	195 (25)	106 (13)	786 (100)	5.04
Fifth	317 (35)	33 (4)	156 (17)	205 (22)	107 (12)	912 (100)	3.27
Sixth	883 (30)	156 (3)	736 (25)	530 (18)	324 (11)	2943 (100)	2.70
Seventh	2849 (34)	470 (6)	1829 (22)	1201 (14)	1083 (12)	8500 (100)	3.50
Annual Plans+	1734 (33)	376 (7)	1079 (20)	595 (11)	848 (16)	5318 (100)	4.20
Eighth	8936 (42)	1808 (8)	3498 (16)	1516 (7)	2786 (13)	21217 (100)	4.90
Ninth Plan	27363 (51)	1102 (2)	9526 (18)	4350 (8)	4778 (9)	53524 (100)	6.20
Tenth Plan +						25753	5.25

Note: * Includes pre-school education; ++ approved outlay

.. Negligible; E: Estimates by the Planning Commission

Totals may not add up, as Totals include expenditure on other programmes such as art & culture, youth services etc.

** 1965-66 to 1967-68 (three years); + 2002-03 and 2003-04 (two years)

Source: Five Year Plan(s), Annual Plans(s), Analysis of Annual Plan, Education Sector (various years), Economic Survey, and the Report of the NDC Committee on Literacy, Planning Commission, New Delhi.

Five-year plan allocations to secondary education do not show any noticeable systematic pattern. The resources allocated to secondary education

showed that after an initial jump from 13 per cent to 19 per cent between the first and the second five year plans it got relatively stabilized and remained around that proportion until the sixth five year plan. In the sixth plan, for the first time, the allocation was increased to 25 per cent; but this level could not be maintained; it gradually declined to 16 per cent in the eighth five year plan.

During the first phase, i.e., during the first Five Year plan, higher education was not given a high priority. But probably realising the importance of higher education soon, in the second five-year plan the allocation to higher education was doubled from 9 per cent to 18 per cent of the total education outlay. But certainly it is during the third phase, i.e., during the post-Kothari Commission period, higher education received a better treatment, with more than 20 per cent of the total outlay allocated to education being given to higher education. The Kothari Commission has stressed on the linkages between education and development in general and higher education and development in particular, when it highlighted the need to produce quality manpower. But the fourth phase was the worst period for higher education. The relative share of higher education touched an all-time low level of seven per cent in the eighth five-year plan. The economic reform policies introduced in the beginning of the 1990s contributed to inflicting steep cuts on allocations to higher education and also effected drastic changes in the perceptions on public financing of higher education. As a result, today few hope that even during the tenth five-year plan higher education would be allocated any better share of the total education outlay. In the recent years there has been a serious neglect of higher education.

To sum up, India has made significant achievements in the development of education: Indian education system at all levels was thrown open after independence to all -- rich, poor, and middle income classes, men and women, rural and urban populations, backward and non-backward segments of the population. Social and cultural diversity has also become an important strength of Indian higher education. Secondly, as a consequence, there has been a veritable explosion in numbers -- student numbers, institutions, and teachers. Thirdly, there has been the development of institutions of excellence, producing highly specialised human capital. Lastly, it could produce the second largest (next only to China) stock of educated and skilled manpower in the world, and the third largest reservoir of scientific and technical manpower. All this, despite the magnitude of unaccomplished tasks and the problems that the education system is associated with, has an

effect on economic growth, poverty and income distribution, and on social development – life expectancy, infant mortality, population growth, human development, etc.

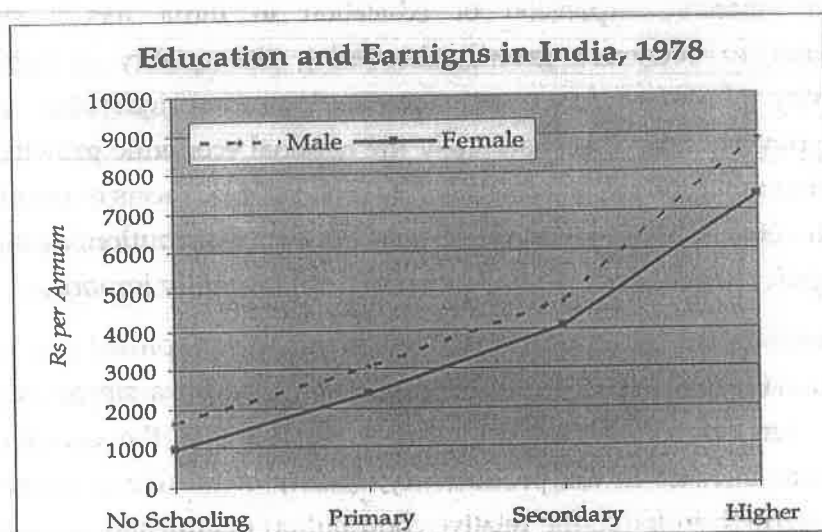
4. Contribution of Education to Development

The massive expansion of education in India has a significant contribution to economic growth, increasing the quality of labour, the productivity of labour force, and thereby increasing individual earnings, reducing poverty and correspondingly the national economic growth, besides contributing to various other social, cultural and political facets of development. In fact, the effects of education on poverty, income distribution, health status, demographic changes, etc., are also found to be significantly important.

Contribution of education to economic development can also be measured with the help of production function or even a simple regression equation. In one of the earliest attempts to estimate the contribution of education to increase in the productivity, quality of the labour force and to economic growth in India, the relative contribution of education to increase in productivity per person was estimated to be as high as 14.01 per cent during 1948-49 to 1968-69; and 0.36 per cent of improvement in the quality of labour force was attributable to education (Dholakia, 1974). The relative contribution of education to the rate of economic growth was 6.79 per cent during the same period. In fact, it increased significantly from 5 per cent during 1949-61 to 10.06 per cent during 1961-69. According to later works, these estimates were found to be underestimates. The contribution of education to economic growth in India was asserted to be as high as 34.4 per cent (Psacharopoulos, 1973). But Loh (1995) using 1971-81 data estimated the corresponding ratio to be 27 per cent.

It has been noted very clearly that investment in education in India is "economic" (Heyneman, 1980). Individual wage earnings systematically increase significantly by increasing levels of education (Blaug *et al.*, 1969; Kothari, 1970; Tilak, 1987; Mehta, 1990). This is found to be true both in national and micro level surveys and is also true for total and subgroups of population. For example, based on a micro level household survey, Tilak (1990) reported that while earnings of male workers get nearly doubled if they have higher education, compared to secondary education, the same increase by 80 per cent in case of women.

Figure 7



As the estimates given in Table 12 show, education has a strong effect on individual wages, the effect being higher in case of regular workers, compared to casual workers, and the effect increases systematically by increasing levels of education, the effect being the highest in case of those who have higher education. There is a significant jump in the coefficient between secondary and higher education, suggesting that secondary education may be a threshold level for education to influence the earnings.⁷

Table 12: Regression Coefficients of Education in Wage Regressions for Regular and Casual Workers

	Regular Wage Workers			Casual Wage Workers		
	1983	1993	1999	1983	1993	1999
Completed Primary School	0.0658***	0.0426***	0.0485***	0.0088	0.0108*	0.0227***
Completed Middle School	0.1361***	0.0933***	0.1090***	-0.0065	-0.0079	0.0165*
Completed Secondary School	0.3486***	0.2640***	0.2945***	-0.0085	-0.0348*	0.0117
Completed Graduate School	0.6192***	0.5385***	0.6025***	-0.0043	-0.0693*	0.018

Note: *** significant at 1% level; ** significant at 5% level; * significant at 10% level
Source: Vasudeva-Dutta (2004 ?)

Conventionally the contribution of education to economic development is analysed in terms of education-earnings relationships and more conveniently in the form of rates of return. Rates of return are a

⁷ Similarly we also know the relationship between education and unemployment is of an inverted U-shape, and the rate of unemployment is maximum at secondary level; and that it starts declining only after reaching the peak at secondary/senior secondary level (Tilak, 1994).

summary statistic of the relationship between lifetime earnings and the costs of education. The economic returns to education in India are also estimated to be reasonably high; they are comparable to rates of return to investment in physical capital on the one hand, and to rates of return to education in other developing and developed countries of the world, and that they are moreover found to be increasing. For example, in almost first of its kind in India, Harberger (1965) and Nalla Gounden (1967) estimated following rates of return to education in India. The estimates by Harberger (1965) given in Table 13 show that both secondary and higher education yield a rate of return at least above 10 per cent.

Table 13: Rates of Return to Education in India, 1961		
	Assumption I	Assumption II
Graduate/Post Graduate compared with Primary	15.0	14.1
Secondary compared with Primary	11.9	10.0
Graduate/Post Graduate compared with Secondary	16.9	16.3
Source: Harberger (1965, p. 27)		

According to Blaug, Layard and Woodhall (1969) compared to the social rate of return of 20 per cent and 17 per cent in 1961 to primary and secondary education respectively, the estimated returns in 1978 were 23 per cent and 18 per cent respectively, and it was 11 per cent for higher education (Tilak, 1987). Despite some of the severe limitations that the estimates on rates of return, particularly social rates of return, carry with, these estimates are strongly believed to be a good indicator of the economic contribution of higher education.

Table 14: Average Private Rate of Return to Education, by Levels (%)						
	Regular Wage Workers			Casual Wage Workers		
	1983	1993	1999	1983	1993	1999
Primary School	1.32***	0.85***	0.97***	0.18	0.22*	0.45***
Middle School	2.35***	1.69***	2.02***	-0.51***	-0.63***	-0.2
Secondary School	5.31***	4.27***	4.64***	-0.05	-0.67*	0.12
Graduate School	9.02***	9.15***	10.26***	0.14	-1.15*	0.21
Note: *** significant at 1% level; ** significant at 5% level; * significant a 10% level						
Source: Vasudeva-Dutta (2004?)						

Estimates of rates of return based on earnings function also indicate substantial and increasing returns to education (see Tilak, 1994). Private rates of return estimated using wage functions by Vasudeva-Dutta (2004?) also show that

returns to higher education are high, about ten per cent. Self and Grabowski (2004) found significant impact of secondary education on economic growth and the relationship is causal and statistical significant when secondary education is measured in terms of enrolments or in the form of stock of human capital.

It should be noted that these returns are in addition to several kinds of externalities associated with investment in human capital. The effect of education on agricultural development was also found to be quite high (see Tilak, 1994). It was also found by earlier researchers (Raza and Ramachandran, 1989) that the threshold level for education to influence agricultural development in rural areas increases from primary to secondary education. On the whole, the contribution of education to economic growth in India has been significant. While it could not be so precisely quantified, the contribution of education to social development was also found to be significant, i.e., in reducing birth rate, infant mortality rate, and poverty and in improving life expectancy, levels of living, and income distribution.

Vocational/Technical education and training are generally believed to be more directly related to labour market needs and accordingly to productivity and growth. The rates of return to technical training were also estimated in India, though they are confined to a few specific cases. Chakravarti (1972) estimated social rates of return to a two-year training programme (that trained unskilled workers) in a heavy electrical industry, a public sector enterprise, which were as high as 48 per cent in some cases, but on average were about six per cent. When productivity or job performance was measured by a cardinal scale of worker efficiency ratings, workers with on-the-job training were found to be highly productive, than those trained in pre-employment vocational institutes (Fuller, 1976). A study of six industries in Delhi (Thakur, 1979) also confirmed that social rates of return to firm-based training were higher (9.6 per cent), compared to training in industrial training institutes (7.8 per cent), though both were positive and high. The rates of return to vocational and technical secondary education are found to be less compared to general secondary education; nevertheless the former ones are positive and reasonably high. Further, returns to technical training provided out of schools, either on the job, or in institutes like training institutes are generally attractive (see Tilak, 1988).

Very few major empirical estimates are available on the quantitative effect of specialised human capital on economic development. In a relatively recent growth accounting exercise, Mathur (1987) estimated the contribution of

'technological change' to economic growth in India to be quite significant. Such research is relatively abundant particularly referring to agricultural productivity in India (see Tilak, 1994). In a very recent study, Malathy and Duraisamy (1993) estimated rates of return (using Mincerian earnings function) to scientific and technical education in India. The average rates of return based on 1981 census survey data, are high and vary between 17.4 per cent (Under-Graduate Diploma) and 70.8 per cent (Ph.D. Degree). Similar high rates of return to scientific and technical manpower were also reported by Nalla-Gounden (1994).⁸ Though few studies are available on the effect of research and development on other aspects of national development, its contribution is well noted.

On the whole, it is generally felt that the returns to investment in human capital could be higher, had (a) the quality of education received serious attention of educational planners, and (b) educational planning is well integrated with economic planning, emphasizing poverty reduction, income distribution and economic growth. For example, Behrman and Schneider (1992a) argued that India did not reap much gain from investments in human capital in terms of economic growth and poverty alleviation, and that there might be substantial potential gains to be reaped in the future from India's human capital.

With respect to other aspects of development and the relationship of education with them, often the researchers (World Bank, 1997; Dasgupta, 1990; Tilak, 1991, 1994; Bhatta, 1998) confined to estimating coefficients of correlation between literacy or primary education and the corresponding development indicators such as life expectancy, infant mortality, fertility, birth rate, population growth, health status etc. The importance of secondary and higher education in improving social development indicators has been rarely examined.⁹ Even with respect to economic development, some important research has exclusively focused on primary education (Dreze and Saran, 1993).

⁸ While the earnings of the scientific and technical workers are generally high, interestingly it is found that the real earnings have declined between 1971 and 1981. See Chopra (1994).

⁹ Tilak (1991) used percentage of villages with secondary schools as a correlate of life infant mortality in India along with other indicators on primary education, literacy etc.

5. Higher Education and Development: Recent Research Evidence on Asian Countries¹⁰

The available research evidence on Asian countries shows that the general presumption that higher education is not necessary for economic growth and development, particularly in developing countries and on the other hand, it is literacy and primary education that is important, is not a correct presumption.

First, available estimates on rates of return, given in Table 15, clearly show that the rates of return to investment in education are high. Higher education yields a rate of return higher than or at least equivalent to secondary education in all the continents.

Table 15: Rate of Return to Secondary and Higher Education in the World				
Regions	Social		Private	
	Higher	Secondary	Higher	Secondary
Latin America & Caribbean	12.3	12.9	19.5	17.0
Sub-Saharan Africa	11.3	18.4	27.8	24.6
Asia	11.0	11.1	18.2	15.8
Europe/Middle East/North Africa	9.9	9.7	19.5	17.0
OECD	8.5	9.4	11.6	11.3
World Average	10.8	13.1	19.0	17.0
Source: Psacharopoulos and Patrinos (2004, p.17)				

Though the rate of return to higher education is less than that to primary education, it should nevertheless be noted that higher education does yield an attractive rate of return to the society and to the individual as well.

The estimates in Table 15 are regional averages. There are wide variations in the rates of return in several countries. Table 16 presents the available estimates on rates of return to higher education in some of the Asian countries, for which data are available. Some of the estimates are rather dated. Yet these estimates clearly reveal that (a) investment in higher education yields positive rates of return to the individual and also to the society at large; (b) in several countries social rates of return are high, above ten per cent, and in some cases above 20 per cent; and (c) rates of return seem to be increasing over the years in some countries on which

¹⁰ This section is partly drawn from Tilak (2003a).

such estimates are available.

Table 16: Rates of Return to Higher Education in Asian Countries							
Country	Year	Social	Private	Country	Year	Social	Private
China	1993	11.3	15.1	Pakistan	1975	8.0	27.0
Hong Kong	1976	12.4	25.2		1984-85	19.8	26.5
India	1965	10.3	16.2		1991		31.2
	1978	10.8	13.2	Philippines	1971	8.5	9.5
	1995		18.2		1988	10.5	11.6
Indonesia	1978	14.8		South Korea	1971	9.3	16.2
	1986	22.0			1986	15.5	17.9
	1989	5.0		Singapore	1966	24.1	25.4
Iran	1972	11.5			1998	13.9	18.7
	1976	13.6	18.5	Sri Lanka	1981		16.1
Malaysia	1978		34.5	Taiwan	1970	15.0	18.4
	1983	7.6	12.2		1972	17.7	15.8
Nepal	1982		21.7	Thailand	1970	11.0	14.0
	1999	9.1	12.0		1985	13.3	17.4
					1989		11.8
Secondary Source: Tilak (1994); Psacharopoulos (1994) and Psacharopoulos and Patrinos (2004)							

Estimates based on production functions also indicate a strong effect of higher education on development. Higher education -- measured in terms of the gross enrolment ratios (GER) or in terms of higher education attainment (HEA), i.e., proportion of population with higher education -- is found to have a positive effect on the level of economic development; and if time lag is also allowed in the production functions better results are obtained. Regressions of GDP per capita in 1999 on enrolment ratio in higher education around 1990 in 49 countries of the Asia Pacific region¹¹ have shown positive effect of higher education on economic growth. The regression coefficients are positive and statistically significant at one per cent level, indicating a significant effect of higher education on economic growth of the nations.

¹¹ The sample includes all countries in the Asia Pacific region on which required data are available. Data on education, economic growth, and other indicators of development are largely collected from Unesco (1999), UNDP (2001), and World Bank (2000).

Table 17: Regression Estimates of Higher Education on Economic Development in Asia							
<i>Dependent Variable: ln GDP/pc</i>							
Eqn.	Higher Education Variable	Intercept	Coefficient	R-Square	Adjusted R-Square	F-value	Degrees of Freedom
1	GER	3.3904	0.0162 (4.005)	0.2628	0.2464	16.038	46
2	HEA	3.3943	0.0195 (3.917)	0.3911	0.3469	15.343	28

Note: Figures in parentheses are t-values
 All coefficients are statistically significant at 99 per cent level of confidence.
 Notation: GDP/pc: Gross Domestic Product per capita (PPP 1999)
 GER: Gross Enrolment Ratio (per cent) around 1990
 HEA: Higher Education Attainment (Proportion of population with higher education) (latest: 1990s)

As expected, use of HEA gives a better result, with a higher coefficient of determination, and the variable has a higher effect, as the value of the coefficient suggests. Though these simple regression equations, show more of correlation, than causal relationship, both the equations make it clear that higher education is likely to make a significant and positive contribution to economic growth. Hence, it may not be proper to conclude that its role is insignificant.

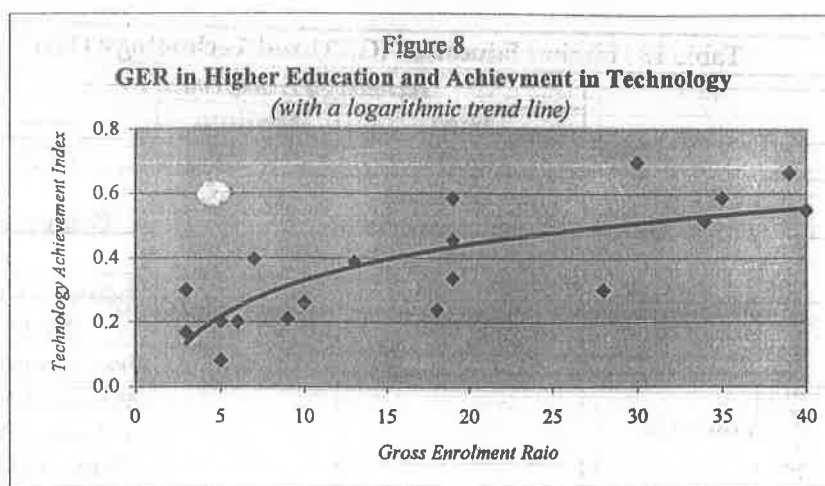
In the rapidly technologically changing world, technology makes a significant difference to the economic growth of the nations. UNDP (2001) developed a technology achievement index (TAI), based on the degree of creation of technology in a given economy, the extent of diffusion of old and recent innovations, and human skills. The level of achievement in technology critically depends upon the level of higher education in a given economy. After all, it is higher education and research that help in developing new technology; it is higher education and research that contributes to innovations and in their diffusion. So one can expect a very strong effect of higher education on the development of technology in any society. In fact, the level of achievement in technology may be a close indicator of economic growth itself. Most countries with high enrolment ratios in higher education became 'leaders' in technology, with high levels of achievement in technology, as shown in Table 18. The converse is also true: a large number of countries with low enrolment ratios (say less than ten per cent) are 'marginalized' in the area of technology. Those with medium level of enrolment ratios, nearly 20 per cent, like Singapore and Hong Kong are indeed 'potential leaders' in technology.

Table 18 : Higher Education (GER) and Technology (TAI)				
		Technology Achievement Index		
		High (>0.5)	Medium (0.4-0.5)	Low (<0.4)
Gross Enrolment Ratio	High (>20)	New Zealand, Korea, Australia, Israel, Japan		Philippines
	Medium (11-20)	Singapore	Hong Kong	Thailand, Cyprus, Syria
	Low (<10)			Iran, Indonesia, Malaysia, India, Sri Lanka, Nepal, China, Pakistan
Source: Based on UNDP (2001) and Unesco (1999).				

A few countries like Philippines and Thailand with medium and high levels of enrolment ratios are classified by the UNDP (2001) as 'dynamic leaders'. The rest who did not expand their higher education systems well, are indeed 'marginalized.' We find not even a single country with a low enrolment ratio (less than ten per cent) in higher education to have achieved high or medium level of achieving in the technology index.

The relationship between higher education and technology could be shown statistically as well. The simple coefficient of correlation between enrolment ratio in higher education and technology achievement index is as high as 0.8 and that between technology and higher education attainment is 0.65.

Table 19: Regression Estimates of Higher Education on Achievement of Technology in Asia							
Dependent Variable: In Technology Achievement Index (TAI)							
Eqn	Higher Education Variable	Intercept	Coefficient	R-Square	Adjusted R-Square	F-value	Degrees of Freedom
1	GER	-0.7405	0.0143 (4.749)	0.570	0.545	22.552	17
2	HEA	-0.6535	0.0152 (3.055)	0.400	0.357	9.335	15
Note: Figures in parentheses are t-values							



Though the number of observations is small, the simple regression equations estimated here (Table 19) and the trend line shown in Figure 3 does show a very strong and statistically significant effect of higher education on the level of achievement of technology.

Higher Education and Social Development

The above rates of return and regression coefficients do not capture several non-economic benefits of higher education. Most studies on the relationship between education and development indicators, such as human development, health, life expectancy, mortality rate, poverty, etc., concentrated on literacy and school education. Rarely has the role of higher education been examined in this context, probably on the presumption that higher education does not have any role in this. Such an assumption is widespread.

Simple coefficients of correlation given in Table 20 present a brief idea of the relationship between higher education and a variety of aspects of well being. All coefficients of correlation between higher education and development indicators have expected signs whether it is in relation to gross enrolment ratio or in relation to higher education attainment. Second, most coefficients are also statistically significant with high *t*-values. An exception is the coefficient between higher education attainment and poverty. All the other coefficients are significant at 99 per cent level of confidence; except the coefficients relating to gender empowerment index and poverty, which are significant at 95 per cent level

of significance,¹² indicating that higher education is also positively related to several human development indicators, in addition to economic development.

Table 20: Coefficients of Correlation between Higher Education and Social Development Indicators			
Between	n	GER (around 1990) [54]	HEA (Latest year) [34]
<i>And</i>			
Human Development Index (1999)	49	0.60309	0.55183
Gender Development Index	42	0.63454	0.55238
Gender Empowerment Index	11	0.60562	0.65397
Life Expectancy	54	0.52611	0.54091
Infant Mortality Rate	50	-0.46108	-0.46099
Total Fertility Rate	54	-0.56698	-0.47447
Poverty (International)	15	-0.56614*	-0.29956+
Note: Figures in [] refer to number of valid countries for which data are available; N: number of observations; r: coefficient of correlation Poverty (International): % of population below the line of income poverty of \$1) * statistically significant at 5% level; + not significant even at 10% level; all others are significant at 1% level.			

Higher education is found to be very significantly related to the human development index and also to the gender development index. Higher the level of higher education in a society, whether in stock or flow forms, the higher can be the level of human development, through its influence on two main components of human development index, viz., the life expectancy, and GDP per capita. It is not only life expectancy that is significantly related to higher education, but also infant mortality, another measure of health is significantly related to higher education.

Similarly, the effect of higher education on fertility rates can also be two-folded: higher education may bring in attitudinal changes on the need to reduce fertility rates for development on the one hand, and secondly, prolonged education, i.e., enrolment in higher education may delay marriages, and lead to reduction in fertility rates. For example Japan and Korea with highest levels of higher education have somewhat lowest levels of total fertility rates, 1.4 and 1.5 respectively. In contrast, the total fertility rates in Nepal and Cambodia where hardly one per cent

¹² In both cases, number of observations considered is very small, due to non-availability of data on the respective indicators.

of the population has higher education; the fertility rates are 4.8 and 5.3 respectively.

Finally, the relationship between higher education and poverty. The estimated coefficients of correlation between poverty, i.e., per cent of population living below the intentionally defined poverty line of US\$ one per day and higher education in 15 Asian countries on which data on poverty levels are available, suggest that poverty is inversely related to the level of higher education. The relationship between poverty and gross enrolment ratio in higher education is negative and the coefficient is statistically significant; but the coefficient between poverty and higher education attainment is not significant, though negative as one expects. In general, one can argue that while basic education may take people out of poverty, this can be sustained well by secondary and higher education, which help in upward mobility and offer better economic opportunities.

Thus, the evidence shows that higher education has a very significant role in the development of the societies – in terms of economic development; human development, gender-biased development, improvement in health, life expectancy, and reduction in fertility, infant mortality and poverty; and that the general assumption about the significance of secondary and higher education in development cannot be valid.

6. Secondary and Higher Education, Poverty and Development: Fresh Evidence

In the earlier section, some recent research on Asian countries on the role of higher education and development is briefly presented. Intra-country data, particularly data on a country like India may be more detailed to examine similar relationships, which is attempted here. Based on most recent statistics available, this section attempts to provide some evidence on the role of secondary and higher education in development in India. Using the state-wise data, an attempt is made to regress a variety of indicators on poverty and development on stock of adult population with secondary and higher education.

At the very outset, it would be interesting to note that while literacy has a positive impact on poverty reduction and development, mere literacy does not. Literates include all people who are mere literate and also all educated people. Rarely mere literacy rate is examined in relation to development.

The simple coefficients of correlation between various levels of education (percent of population with different levels of education in 1995-96 and poverty ratio in 1999-2000) in 32 states and union territories in India, given in Table 21 reveal some interesting aspects.

Table 21: Coefficient of Correlation between Education and Poverty	
Coefficient of Correlation between Poverty Ratio (1999-00) with	
% of Population (1995-96) having	<i>r</i>
Illiteracy	0.21242
Literacy	0.48595
Primary	0.05105
Middle/Upper Primary	-0.35790
Secondary and above	-0.55952

Illiteracy and poverty go together; this is not surprising; this is most widely confirmed. But more importantly, literacy (mere literacy) and primary education are also positively related to poverty ratio. It is only when people have at least completed middle/upper primary level of education, the relationship between education and poverty becomes negative and important; and the negative relationship becomes stronger when the level of education is

raised to secondary (and above). Thus middle level education may serve as a threshold level for education to influence poverty.

The relationship between secondary and higher education to poverty and a couple of other aspects of development is examined below.

The stock of adult population with secondary and higher levels of education (SHEA) is an important indicator of the level of development of secondary and higher education. This stock indicator represents the cumulative efforts of a country in the development of secondary and higher education over the years. The larger the stock of population with secondary and higher education, higher could be the economic growth.

What is the effect of secondary and higher education on poverty and development? Using the state level data, simple regression equation is estimated regressing poverty and development indicators on SHEA.

Earlier Tilak (2004a) has examined the relationship between higher education and economic development and it was found to be significant. A simple coefficient of correlation between state domestic product per capita (SDP/pc) (1999-2000) and percent of population with higher education (HEA) (1995-96) in various states and union territories was high and statistically significant. The value of the coefficient is 0.686. Similarly, the coefficient of correlation between poverty (1999-2000) and percent of population with higher education is also significant, and the coefficient is negative in value, it is: -0.371.¹³

A simple semi-log regression equation of (SDP/pc) on percentage of population with higher education (HEA) also yielded statistically significant and meaningful results (with t-values in parentheses), as follows:

$$\ln \text{SDP/pc} = 9.320 + 0.0651 \text{ HEA}$$

(86.0) (3.463)

R-Square: 0.324 Adjusted R-Square: 0.297
F-Value: 11.99 n = 28

It may be argued that these figures highlight the nature of association, between higher education and development, and not the cause and effect relationships. Nevertheless, despite some such familiar limitations, these

¹³ The number of observations in both cases is 28 (states/union territories in India); if all union territories are also considered, (n = 32), the coefficient of correlation between higher education and poverty increases marginally to -0.381.

results, that used time lag for education to have an effect on poverty and economic development, do show that higher education is positively related to economic growth and inversely to poverty; and it is likely that higher education influences positively economic growth.

We focus here more on poverty and other aspects of development. A series of regression equations are estimated and the results are given in the following tables. In all equations time lag is allowed, i.e., influence of the SHEA in 1995-96 on development indicators of a later period, mostly in 1999-2000. Secondly, in all cases a semi-log regression equation is used.

- a) As already noted, poverty ratios are estimated considering the levels of consumption expenditure of the households. Datta and Sharma (1995) found a strong negative relationship between consumption expenditure and poverty in rural India. Ravillion and Datt (1994) have explained a large proportion of variation in poverty with the help of per capita consumption expenditure. So it may be in order to examine the relationship between per capita consumption expenditure of the households and education, Per capita consumption expenditure is regressed on SHEA and the results given in Table 22 show that the expenditure level is considerably influenced by the SHEA. Higher the level of SHEA, the higher will be the expenditure and it is true in rural as well as urban areas with positive and statistically significant coefficients.

Table 22: Regression of <i>In Per Capita Consumption Expenditure on Secondary and Higher Education</i>					
	Intercept	Regression Coefficient	Adjusted R-Square	F-Value	Degrees of freedom
Rural	6.1087	0.0205*** (3.826)	0.306	14.642	31
Urban	6.493	0.0087** (2.263)	0.117	5.123	31
Rural Plus Urban	2.6604	0.0091*** (5.418)	0.478	29.36	31
Note: *** significant at 1% level; ** significant at 5% level.					

Education explains a larger proportion of variation in consumption expenditure in various states in rural India than in urban India, though in both cases the results are statistically significant. When we examined the rural plus urban levels of consumption expenditure, the results improved

further, with the adjusted coefficient of determination being nearly 0.5.

b) Similar equations on poverty also yield very meaningful results as shown in Table 23. The regression coefficient of SHEA is negative and statistically significant at 99 per cent level of confidence, showing clearly that higher the percentage of population in a state with secondary and above education the lower would be the poverty ratio in the state. While this relationship holds both in rural and urban areas, the value of the coefficient and the level of significance suggests that the effect of education on rural poverty is higher than in urban areas.

Table 23: Regression of In Poverty Ratio (1999-2000) on Secondary and Higher Education (1995-96)

	Intercept	Regression Coefficient	Adjusted R-Square	F-Value	Degrees of freedom
Rural	4.1267	-0.0983*** (-4.791)	0.415	22.952	30
Urban	3.7928	-0.0332** (-2.645)	0.189	6.998	30
Rural Plus Urban	3.7294	-0.0426*** (-3.804)	0.303	14.469	30

Note: *** significant at 1% level; ** significant at 5% level.

c) As mentioned earlier, much of the literature on human development also concentrated on the role of literacy and primary education on infant mortality and life expectancy, and the role of secondary or higher education was not analysed, assuming that secondary and higher education has no role at all in improving life expectancy or reducing mortality rate among the children. We find here that this is not true. Secondary and higher education have a very significant effect on reducing infant mortality rate. Higher levels of education help a lot in reducing infant mortality rates, as people with higher education would be more aware of the need for preventive health care measures and also would be aware of the availability of general healthcare facilities, leading to sound decision making within households regarding healthcare. Higher education can influence health of the population in a different way as well, through provision of skilled medical manpower to the society, thereby improving the quality and quantity of medical manpower in the society.

The regression coefficient is negative and it is statistically significant. Further, since the variable on education refers to adult population with secondary and higher education, and as the adults can adopt necessary measures immediately without any time lag, the effect of education on infant mortality could be almost instantaneous. This is clear, when we examine the regression equation that has not allowed for any time lag, and the mortality rate in 2001 is regressed on the education of the population in 1999-2000, i.e., without allowing for much time lag.

Table 24: Secondary and Higher Education and Infant Mortality					
	Intercept	Regression Coefficient	Adjusted R-Square	F-Value	Degrees of freedom
<i>Regression of ln Infant Mortality Rate (2001) on Secondary and Higher Education (1995-96)</i>					
Rural	1.9383	-0.0182*** (-2.909)	0.278	8.465	22
Urban	1.4787	0.0079 (0.085)	-0.045	0.007	22
<i>Regression of ln Infant Mortality Rate (2001) on Secondary and Higher Education (1999-2000)</i>					
Rural	1.9877	-0.0277*** (-4.944)	0.439	24.44	29
Urban	1.7388	-0.0099 (-1.502)	0.039	2.27	30
Note: *** significant at 1% level; ** significant at 5% level.					

However, we find that the effect of secondary and higher education on infant mortality is confined to rural areas. In case of urban areas, the regression coefficients have expected signs, but they are not statistically significant (at 10 per cent level).

d) In case of life expectancy, another important measure of health conditions, also, the effect of secondary and higher education is significant in rural areas, but in urban areas, though in all cases, the sign of the regression coefficient is positive. In case of both male and female life expectancy, the influence of education is statistically significant, increasing the life expectancy considerably. The regression coefficient of urban education in 1999-2000 on female life expectancy is statistically significant at 10 per cent level. The effect is also higher when the time lag is reduced. Life expectancy estimated for

2001-06 is more influenced by the education in 1999-2000 than education in 1995-96. In all cases, the number of observations is small, due to non-availability of data on life expectancy; but the results are robust.

Table 25: Regression of ln Life Expectancy at Birth (2001-06) on Secondary and Higher Education

	Intercept	Regression Coefficient	Adjusted R-square	F-Value	Degrees of freedom
<i>Dependent Variable: ln Male Life Expectancy</i>					
Rural Education (1999-2000)	1.764 (154.895)	0.0046*** (4.009)	0.53	16.8	13
Rural Education (1995-96)	1.768 (136.668)	0.0033*** (3.302)	0.414	10.904	13
Urban Education (1999-2000)	1.761 (33.105)	0.0017 (0.882)	-0.016	0.778	13
Urban Education (1995-96)	1.774 (29.984)	0.0009 (0.559)	-0.052	0.312	13
<i>Dependent Variable: ln Female Life Expectancy</i>					
Rural Education (1999-2000)	1.76 (132.650)	0.0062*** (4.763)	0.608	22.691	13
Rural Education (1995-96)	1.768 (107.032)	0.0042*** (3.289)	0.412	10.819	13
Urban Education (1999-2000)	1.708 (27.294)	0.0041* (1.785)	0.135	3.184	13
Urban Education (1995-96)	1.743 (23.755)	0.0021 (1.040)	0.077	1.081	13
Note: *** significant at 1% level; ** significant at 5% level.					

It may be argued that simple regression equations of economic development on education suggest only correlation between the two, and not necessarily cause and effect relationship. Such an argument is partly pre-empted here, by allowing a time lag for higher education to cause economic development. Secondly, we also find very few states with high levels of higher education being underdeveloped, while all the economically rich states have not necessarily advanced in the development and spread of higher education.

To sum up, secondary higher education has a very significant role in the development of the societies – in terms of economic development, poverty reduction, life expectancy and infant mortality. Though in general it is true that there exists a two-way relationship between higher education and development, the way and the facets of development

analysed here, highlighted the one-way relationship, viz., the contribution of secondary and higher education to development. For instance, it does not sound logical to argue that reduction in infant mortality rate or improvement in life expectancy leads to development of secondary or higher education significantly. Similarly, current national income may influence the growth of education in the future, but educational levels of population 5-6 years ago cannot be argued to be influenced by the current levels of economic development, or by other current indicators of development, particularly in modern times, when rapid socioeconomic developments are taking place. In short, though the statistical analysis used is very simple, the group of states used in the regression analysis is highly heterogeneous, and that there can be several factors influencing economic growth, poverty and other facets of development in addition to secondary higher education; nevertheless, it indicates a strong and positive relationship – secondary and higher education clearly influencing development.

7. Policy Vacuum and Lopsided Development in Education

Though the contribution of secondary and higher education to development is quite significant, India, like many other developing countries could not pay adequate attention to it. In fact, there has been a strong tendency to neglect secondary and higher education and to focus, rather exclusively on elementary, more particularly primary education. While a major positive outcome of the Education For All conference at Jomtien was that basic education received serious attention of the national governments and the international community, which is good in itself, it has at the same time produced an undesirable effect on other levels of education. It was widely felt that elementary education goals could be reached only at the cost of expansion of secondary and more particularly higher education. As a result, either secondary and higher education was ignored in the policy planning exercises, or special measures were initiated to reduce the intensity of public efforts in higher education or both. This did happen in India as well. Many public policy and plan documents, including *Economic Surveys*, annual budget speeches of the Finance Minister and debates and discussions on policy issues in education ignored higher education altogether, and got confined to literacy and primary education. Secondary education, including vocational education does not figure prominently in these documents. Given the national or more particularly international commitment in case of elementary education, the government felt that there was no way of continuing to support secondary and higher education at the same level as it used to do earlier. To justify its stand, the government declared, "the higher education system in the country is now sufficiently developed to meet the nation's requirements. The unmet demand for higher education is not considered economically viable" (Government of India, 1994, p. 75).

Another very important development of the early 1990s that had tremendous impact on education was the introduction of 'new' economic reform policies that include stabilization and structural adjustment, which required a drastic cut in public expenditures across the board, including specifically post-elementary education. In fact, these policies set the tone for drastic reforms in higher education in India in the following years; and on the whole, higher education suffered severely (e.g., see Tilak, 2002a).

Allocations to higher education in the eighth and the ninth five year plans reached the all-time bottom levels, as already noted. Hardly 7-8 per

cent of the total education outlay in the eighth Five year plan was devoted to higher education, compared to nearly one-fourth in the fourth five year plan. Not only in terms of relative priority, but also total public expenditure on higher education did not increase in real terms significantly. In fact, in terms of per student expenditure we note a very drastic decline during the decade. Decline in per student expenditures means decline in real resources available per student on average. After all, there were steep cuts in budget allocations for libraries, laboratories, scholarships, faculty improvement programmes, etc. This might produce serious effects on the quality of higher education. Further, during this period quality and more importantly equity got traded-off. A steep decline was also felt in the budgets for scholarships in higher education, that have great potential for promoting equity in higher education, as a large proportion of scholarships are meant for weaker sections (Tilak, 2004b).

Public budgets for higher education were shrunk drastically during the 1990s, and it was not forecasted to be anything better in the near future. The Government of India's (1997b) discussion paper on *Government Subsidies in India* provides an insight into the government thinking. For the first time all post-elementary education that includes secondary and higher education was classified in the discussion paper as a 'non-merit good' (and elementary education as a merit good) government subsidies to which would need to be reduced drastically (see Srivastava and Sen, 1997). This is a major revelation of the thinking of the Government of India on secondary and higher education in India. In a sense, the public policies and action that preceded and followed this statement seemed to have strongly imbedded in such a view, though the Ministry of Finance has partly modified its earlier classification of goods into of merit and non-merit nature. It reclassified higher education into a category called 'Merit 2 Goods', which need not be subsidised by the State at the same level as the merit goods (Srivastava and Amarnath, 2001).

Most importantly, absence of a clear coherent explicit long term policy perspective on secondary and higher education in India is the hallmark of Indian education of the 1990s and even of the present decade of the 21st century.

Faulty Assumptions in Higher Education

Why apathy for higher education? Why is the government unwilling

to give priority to higher education? Government's apathy is based on certain faulty assumptions on higher education. The most important assumption that was widely held for a long time was that higher education is not important for economic growth and development. On the other hand, it is literacy and primary education that is argued to be important. There is a general presumption that higher education is not necessary for economic growth and development. Estimates on internal rate of return also contributed to strengthening of such a presumption.

Second important assumption that was also widely held was that developing countries like India couldn't fulfill their goals with respect to primary education, unless secondary and higher education are neglected. This assumption juxtaposes one level of education against another, and leads to fragmented look at education sector. There are inter-linkages between different sub-sectors of education and all levels of education are important. Further, the government seems to be sharing the widely held belief that development of primary education, at best elementary education, is enough for development of India; or that is the maximum that can be afforded by the poor India. International experience clearly shows this cannot be true. Primary education is necessary for not only education development, but also social and economic development. At the same time the experience also demonstrates that primary education is not sufficient for economic growth and a sustainable development. Societies that have concentrated rather exclusively on primary education and ignored secondary and higher education could not achieve high levels of economic growth. In short, it is not adequate for fast economic growth to exclusively concentrate on primary education.

In the context of globalisation and international competition, higher education also becomes critically important. Higher education cannot wait until primary and secondary education is completely universal or well expanded. The traditional sequencing of first primary education, then secondary education and then only higher education may not work any more.

That government that aims at transformation of the Indian economy into an East Asian tiger-like economy, could afford to ignore higher education, might mean that it assumes that economic miracles can be created without higher education! It might be assuming that even 'knowledge society' can be built and revolution in information technology can be achieved

without bothering about strengthening higher education institutions.

Thus, basically the assumptions of the government on higher education have been faulty. That government that aims at transformation of the Indian economy into an East Asian tiger-like economy, could afford to ignore higher education, might mean that it assumes that economic miracles can be created without higher education! It might be assuming that even 'knowledge society' can be built and revolution in information technology can be achieved without bothering about strengthening higher education institutions. These are untenable assumptions. Further, the government seems to be sharing the widely held belief that development of primary education, at best elementary education, is enough for development of India; or that is the maximum that can be afforded by the poor India. It also seems to be under the impression that State can withdraw from higher education and save its resources and private sector can fill the gap in the development of higher education. All these assumptions are untenable, faulty, are not borne out of any evidence; and in fact, they can be dangerous.

But as a result of some such policies or more importantly due to the vacuum in policies, education development has been lopsided. Public expenditure on higher education has been severely affected particularly in the 1990s. Expenditure on secondary education has not increased in any significant level. Despite rapid growth in enrolments, only about one-third of the children of the age group 14-17 are enrolled in secondary schools and less than nine per cent of the relevant age group in higher education institutions. Both with respect to growth in education, and also equality in education, the progress has been far from satisfactory. In fact, as stated earlier, no clear long term policy has been formulated in case of secondary and more particularly with respect to higher education development in the country. The poor quality of the educational edifice also affects growth and poverty in the country.

8. Summary and Concluding Observations

The contribution of basic education to development is widely recognised. Ever since 1985 when the World Bank set poverty reduction as an important agenda of the Bank, and highlighted the role of primary education there in, the attention of the policy makers, planners and development thinkers has shifted very systematically in favour of primary education. Substantial policy research and consultancy research has established the strong linkages between primary education and poverty reduction, reduction in infant mortality, reduction in fertility, improvement in life expectancy and so on. Research also covered literacy and non-formal education. Very rarely the linkages between post basic education and development have been analysed. Simultaneously extensive empirical research, a substantial part of which originated from the World Bank, that also established that returns to primary education are high and higher than returns to secondary and higher education, had also led many to conclude that it is only primary education and literacy that matter for development – economic, social and even human development, and secondary and higher education does not matter. The conclusion also led many to recommend that developing countries better concentrate on primary education and deliberately ignore secondary and more specially higher education. It was also felt by many that primary education cannot be provided to all children, unless the growth in post primary education is capped. Accordingly, many developing countries have not paid much attention to secondary and higher education in their national educational policy and planning exercises. The subsequent developments, including the World Bank policy papers, the structural adjustment policies that were to be adopted by most of the developing countries, and the Jomtien (and later the Dakar) conferences on Education For All (EFA), all have contributed to strengthening these trends. The problem of resource scarcity added further to the problem. India has also experienced and continued to experience the same trends.

In this overall background, it would be interesting to examine whether at all post-basic education has any role in development. This question has been examined in this paper, using some of the recent statistics available. A careful review of the research and fresh analysis of secondary data clearly leads us to conclude that post elementary education plays a significant role in development. Based on state-wise data on stock of the population with

secondary and higher education in 1995-96 and development indicators relating mostly to 1999-2000, and simple regression equations, the relationship between post elementary education and development is analysed. Despite some of the limitations of such exercises as they may indicate more of inter-relationship than causal relationship, it may not be wrong to conclude from the analysis the following:

- a) Secondary and higher education enhances earnings of the individuals and contributes to economic development.
- b) Post-elementary education makes a significant contribution to reduction in absolute as well as relative poverty.
- c) It also influences negatively infant mortality.
- d) Life expectancy is also positively related to post-elementary education.

Many other related aspects of development are not analysed in detail here.

The implications of these results are clear and straight forward: Given the importance of post-elementary education along with literacy and elementary education, it is necessary that attention is paid to development of sound and comprehensive education policies.

Coherent long term policies for the development of education, including secondary and higher education for development of the economy are needed. Public policy has to clearly recognise the critical importance of secondary and higher education in development, in poverty reduction, human development and economic growth. While there is some talk of late with reference to secondary education (see e.g., World Bank, 2002b, 2003), higher education is deliberately kept away from such discussions. Education has to be planned as an important component of poverty reduction strategies. Planning education has to be integrated with development planning.

It is important to note that no nation that has not expanded reasonably well its higher education system can achieve a high level of economic development. International evidence shows that all advanced countries are those that have universalized secondary education and have provided a fair degree of access to higher education. Among the advanced countries there is no single country, where higher education was not well expanded. In most developed countries higher education is fairly democratised, and is accessible to all. In fact, there are significant

trends towards massification of the base of higher education. The gross enrolment ratio in higher education in advanced countries varies between 20 per cent and as high as 90 per cent. In contrast, in most of the developing countries, it is restricted to a small fraction of youth. No country could be found in the group of high-income countries with an enrolment ratio of less than 20 per cent. A 20 per cent enrolment ratio in higher education seems to be the critical threshold level for a country to become economically advanced. The 20 per cent enrolment ratio is a necessary, but not a sufficient condition for development, as the enabling environment is also important, that enables education to considerably influence development.

It may be underscored again that it might not be sufficient if the focus has been exclusively on elementary education for the social and economic development of the society on the one hand, and for the development of a strong and balanced edifice of the education system on the other. Education forms an important ingredient of sustainable development, and post-elementary education also serves an important instrument of achieving sustainable development (Tilak, 2004b). The long term influence of post elementary education on all the key dimensions of sustainable development is well known. For example, the role of education in reducing poverty – both at individual and national levels, in improving health and nutritional status of population, in reducing fertility and population growth and thereby contributing to demographic transition, in strengthening democratic forces and in ensuring civil and political rights of the people – is too important to ignore. Balanced development of education of all levels is also a critical factor necessary for economic growth and development and also for its sustenance. It is important to note that while literacy and elementary education are important and necessary for development, they are not adequate for economic development.

Given the inter-dependence of one layer of education on the other, secondary and higher education also becomes critically important along with elementary education for developing and sustaining good quality education at all levels – primary, secondary and higher education.

Sustainable socioeconomic development of the societies requires sustainable education systems. It is necessary to build the educational edifice which focuses on human capital as well as human development, economic

growth as well as equity and reduction in poverty, modern techniques of development as well as traditional methods, national, local as well as global concerns, and human and secular values. Only strong and vibrant education systems, based on sound assumptions and approaches, can play the constitutive and instrumental roles in development. In other words, strong and sustainable education system is necessary to serve (a) itself as development, as 'freedom,' as a 'capability,' as a human right, and as human development, as a key dimension of sustainable development – as an end, and (b) as a means of sustainable development from economic, social, cultural, and political points of view. Secondary and higher education is an essential tool for achieving a sustainable future. In the very context, construction of knowledge societies is also found to be increasingly relevant. It is clear that knowledge societies cannot be constructed without building strong and dynamic high quality higher education institutions. After all, creation and expansion of frontiers of knowledge and dissemination of knowledge is the main function of universities and other institutions of higher education.

In addition, education, including higher education, is also a *public good* – at least a *quasi-public good*, benefits from which are not confined to the individuals who go to colleges, but also others and the society at large are benefited considerably. The externalities of education, including the dynamic externalities of higher education are indeed immense, and they have profound positive effect on economic growth.

Appendix

Distribution of Population by Educational Level, 1995-96 (%)					
State	Illiterate	Literate but below primary	Primary	Middle	Secondary and above
Andhra Pradesh	64.6	9.3	9.9	8.4	15.2
Arunachal Pradesh	61.5	11.9	12.8	7.4	12.0
Assam	32.7	17.1	17.4	18.6	16.7
Bihar	67.5	7.4	6.2	8.9	13.3
Goa	16.6	11.0	14.5	24.6	35.2
Gujarat	48.0	9.4	15.2	14.8	20.1
Haryana	48.4	6.1	18.7	12.7	21.3
Himachal Pradesh	39.7	9.4	20.5	13.6	20.4
Jammu & Kashmir	56.5	2.8	10.0	16.4	20.8
Karnataka	55.5	7.3	12.8	13.4	18.0
Kerala	11.8	11.4	22.0	31.5	25.6
Madhya Pradesh	61.7	10.6	11.8	9.1	13.3
Maharashtra	44.5	7.4	15.9	18.0	24.2
Manipur	38.5	8.7	15.4	17.1	25.4
Meghalaya	25.7	18.6	33.1	14.8	12.9
Mizoram	16.2	23.2	33.7	23.6	10.9
Nagaland	22.4	15.1	25.4	22.8	20.5
Orissa	52.5	14.8	10.3	13.7	11.9
Punjab	43.9	5.0	15.5	13.1	29.0
Rajasthan	66.3	7.3	10.8	8.2	12.8
Sikkim	38.7	21.6	17.8	12.9	12.1
Tamil Nadu	47.0	11.5	18.6	12.8	17.5
Tripura	30.5	21.1	18.4	19.7	13.8
Uttar Pradesh	60.4	5.7	10.6	12.4	15.3
West Bengal	45.0	15.6	19.8	12.0	14.4
AN Islands	22.0	11.9	21.1	19.8	27.9
Chadnirgarh	32.9	6.1	13.1	24.9	51.5
Dadra & Nagar Haveli	34.0	7.2	19.0	24.3	18.5
Daman & Diu	44.7	7.0	9.2	29.6	18.0
Delhi	29.2	2.3	12.5	19.1	50.0
Lakshadweep	14.4	20.0	16.3	34.0	14.4
Pondicherry	35.2	3.7	9.6	30.7	26.0
Source: NSSO (1997, 2001)					

Distribution of Workers by Educational Level, (%)			
	1983	1993-94	1999-00
Andhra Pradesh	6.0	9.8	14.2
Assam	9.7	12.5	16.7
Bihar	6.7	13.2	16.2
Gujarat	11.4	19.0	20.6
Haryana	12.5	25.6	34.3
Himachal Pradesh	11.1	17.7	25.7
Jammu & Kashmir	11.6	23.9	25.7
Karnataka	10.3	15.1	19.2
Kerala	12.1	21.1	26.2
Madhya Pradesh	6.1	11.2	12.1
Maharashtra	11.5	18.3	22.9
Manipur	10.4	26.6	31.4
Meghalaya	7.9	8.3	9.5
Nagaland	21.6	32.2	29.5
Orissa	5.1	7.5	10.1
Punjab	15.9	27.3	31.5
Rajasthan	5.7	10.5	13.7
Sikkim	7.3	20.8	17.6
Tamil Nadu	9.2	15.5	19.8
Tripura	17.1	14.8	18.0
Uttar Pradesh	9.0	15.9	18.9
West Bengal	12.7	15.4	16.5
A & N Islands	9.3	15.1	18.6
Source: Chadha (2004)			

References

- Basu, Aparna (1982) *Essays in the History of Indian Education*. New Delhi: Concept.
- Barro, Robert (1991) Economic Growth in a Cross Section of Countries, *Quarterly Journal of Economics* 106 (2): 404-44
- Behrman, J.R. and Ryan Schneider (1992) "Indian Human Capital Investments in the Past Quarter Century: An International Perspective," *Indian Economic Review* (Special Number): 55-88.
- Benhabib, J and M M Spiegel (1994) Role of Human Capital in Economic Development: Evidence for Aggregate Cross Country Data, *Journal of Monetary Economics* 34: 143-73
- Bhatty, Kiran (1998) "Educational Deprivation in India: A Survey of Field Investigations," *Economic and Political Weekly* 33 (27 & 28) (4-10 and 11-17 July): 1731-40 and 1858-69.
- Blaug, Mark (1975) The Economics of Education in English Classical, Policy Economy: A Re-examination, in *Essays on Adam Smith* (eds. A.S. Skinner and T. Wilson), Oxford: Clarendon Press, pp. 568-99.
- Blaug, Mark (1972) Correlation Between Education and Earnings, *Higher Education* 1 (1): 53-76.
- Blaug, M., P.R.G. Layard and M. Woodhal (1969) *The Causes of Graduate Unemployment in India*. London: Allen Lane the Penguin.
- Bowman, M.J. (1966) The Human Investment Revolution in Economic Thought, *Sociology of Education* 39 (2) (Spring): 111-37.
- Chadha, G.K. (2003) What is Dominating the Indian Labour Market? Peacock's Feather or Feet? Presidential Address, 45th Annual Conference of the Indian Society of Labour Economics. Kolkata: Jadavpur University.
- Chakravarti, A. (1972) "Social Profitability of Training Unskilled Workers in the Public Sector in India," *Oxford Economic Papers*, 24 (1) (March): 113-23
- Chopra, K. (1994) Employment and Earning Levels of Scientific-Technical Manpower in Urban India, in *Sectoral Issues in the Indian Economy* (ed. G.K. Chadha). New Delhi: Har-Anand, pp. 241-79.
- Cohen, Daniel. (1998) *The Wealth of the World and the Poverty of Nations*. Cambridge, MA: MIT Press.
- Cochrane, S.H. (1988) *The Effects of Education, Health and Social Security on Fertility in Developing Countries*. WPS 93. Washington D.C.: World Bank.
- Commission for Africa (2005) *Our Common Interest: Report of the Commission for Africa*. London: DFID [Chairperson: Tony Blair]
- Coombs, Philip H., M. Ahmed (1974) *Attacking Rural Poverty: How Non-Formal Education can Help?* London: Johns Hopkins.
- Dandekar, V.M., and N. Rath (1971) *Poverty in India*. Pune: Indian School of Political Economy.
- Dasgupta, Monica (1990) Death Clustering: Mothers' Education and the Determinants of Child Mortality in Rural Punjab, India, *Population Studies* 44: 489-505
- Datta, K.L., and S. Sharma (1995) Trends in Rural Poverty in the 1980s, in *Poverty and Employment* (eds.: K. Raghavan and L. Sekhar), New Delhi: New Age International, pp. 95-124

- Dharmpal (1983) *The Beautiful Tree: Indigenous Indian Education in the Eighteenth Century*. Delhi: Biblia Impex
- Dholakia, B.H. (1974) *The Sources of Economic Growth in India*. Baroda: Good Companions.
- Drèze, Jean, and Mrinalini Saran (1993) Primary Education and Economic Development in China and India, Development Economics Research Programme Discussion Paper 47. London: London School of Economics and Political Science.
- Drèze, Jean, and Amartya K. Sen (1989) *Hunger and Public Action*. Oxford: Clarendon Press
- Duraisamy, P. (2002) Changes in the Returns to Education in India, 1983-1994: By Gender, Age-Cohort and Location, *Economics of Education Review* 21 (6): 609-22.
- Education Commission (1966) *Education for Development: Report of the Education Commission 1964-66*. New Delhi: National Council of Educational Research and Training [Reprint 1971]
- Fields, Gary S. (1980a) *Poverty, Inequality and Development*. Cambridge, Cambridge University Press.
- Fields, G.S. (1980b) Education and Income Distribution in Developing Countries: A Review of the Literature. In: *Education and Income* (ed. T. King), Staff working paper no. 402. Washington D.C.: World Bank, pp. 231-315.)
- Fuller, W.P. (1976) "More Evidence Supporting the Demise of Pre-Employment Vocational Trade Training: A Case Study of a Factory in India," *Comparative Education Review*, 20 (1) (February): 31-42.
- Galbraith, J.K. (1994) Beyond Contentment, *The Telegraph* (14 June) [Reprint from *The Guardian*]
- Government of India (1986) *National Policy on Education 1986*. New Delhi: Government of India, Ministry of Human Resource Development.
- Government of India, Planning Commission (1993) *Report of the Expert Group on Estimation of Proportion and Number of Poor*. New Delhi: Government of India.
- Government of India (1994) *Annual Report*. New Delhi: Government of India, Department of Education. Ministry of Human Resource Development
- Government of India (1997a) Ninth Five Year 1997-2002. Planning Commission
- Government of India (1997b) *Government Subsidies in India*. New Delhi: Ministry of Finance (May).
- Government of India (2002) *Tenth Five Year Plan 2002-2007*. Planning Commission
- Government of India (2004) *Economic Survey 2003-2004*. New Delhi.
- Government of India (2001) *National Human Development Report 2001*. New Delhi, Planning Commission.
- Gupta, S.P. (1995) Macro Economic Growth and Poverty, in *Poverty and Employment* (eds.: K. Raghavan and L. Sekhar), New Delhi: New Age International, pp. 3-10
- Harberger, A.C. (1965) Investment in Men versus Investment in Machines: The Case of India, in *Education and Economic Development* (eds.: C.A. Anderson and M J Bowman). Chicago: Aldine, pp. 11-50
- Harris, J.; K.P. Kannan and G. Rodgers (1990) *Urban Labour Market Structure and Job Access in India: A Study of Coimbatore*. Geneva: International Labour Office.
- Haq, Mahbub ul, and Khalija Haq (1998) *Human Development in South Asia*. Karachi: Oxford University Press.

- Heyneman, S.P. (1980) "Investment in Indian Education: Uneconomic?" *World Development*, 8 (2) (February): 145-63.
- IIPS: International Institute for Population Studies (1993, 2000) *National Family and Health Survey 1992-93 and 1998-99*. Mumbai..
- Jain, S.C. (1995) General Review and Appraisal of Ongoing Poverty Alleviation and Employment Generation Programmes and Strategies, in *Poverty and Employment* (eds.: K. Raghavan and L. Sekhar), New Delhi: New Age International, pp. 170-89
- Jeffery, R. and Alaka M. Basu (eds.) (1996) *Girls' Schooling, Women's Autonomy and Fertility Change in South Asia*. New Delhi: Sage
- King, Kenneth (2005) Education, Skills, Knowledge and Work on the World's Development Agenda, 2005. Royal African Society Scotland Lecture. Edinburgh: Centre of African Studies, University of Edinburgh (mimeo).
- Kothari, V.N. (1970) "Disparities in Relative Earnings Among Different Countries," *Economic Journal*, 80 (September): 605-16.
- Klien, Shira (2002) Human Capital Externalities in India, London School of Economics, STICERD (October 8) (mimeo) [<http://www.eudnet.net/Member/workshop10-2002/klien.pdf>]
- Kothari, V.N. (1970) "Disparities in Relative Earnings Among Different Countries," *Economic Journal*, 80 (September): 605-16.
- Loh, Jackie (1995) Education and Economic Growth in India: An Aggregate Production Function Approach, in *School Effectiveness and Learning Achievement at Primary Stage*, New Delhi: National Council of Educational Research and Training, pp. 509-27
- Lucas, Robert E. (1988) On the Mechanics of Economic Development, *Journal of Monetary Economics* 22 (1): 3-42.
- Malathy, D., and P. Duraisamy (1993) "Returns to Scientific and Technical Education in India," *Margin*, 25 (4) (July-September): 396-406.
- Mankiew, N.G., D Romer, and D R Weil (1992) A Contribution to the Empirics of Economic Growth *Quarterly Journal of Economics* 107: 407-38
- Marshall, Alfred (1890) *The Principles of Political Economy*. London: Macmillan [9th Edition, 1961].
- Marshall, Alfred (1920) *Principles of Economics*, London: Macmillan, 1947 [Eighth Edition]
- Mathur, Ashok (1987) "Why Growth Rates Differ within India: An Alternative Approach," *Journal of Development Studies*, 23 (2) (January): 167-99.
- Mehta, G.S. (1990) *Education, Employment and Earnings*. New Delhi: Deep & Deep.
- Myrdal, Gunnar (1968) *Asian Drama: An Inquiry into the Poverty of Nations*. Volume III. New York: Twentieth Century Fund.
- Nalla-Gounden, A.M. (1967) "Investment in Education in India," *Journal of Human Resources*, 2 (3) (Summer): 347-58.
- Nalla-Gounden, A.M. (1994) "Financing Education (for All)," Paper presented in the National Seminar on Financing Education for All. New Delhi: National Institute of Educational Planning and Administration. (Draft/mimeo)
- Noor, A. (1980) Education and Basic Needs. Staff working paper no. 450. Washington D.C.
- NSSO [National Sample Survey Organisation] (1998) *Attending An Educational Institution in India: Its Level, Nature and Cost*. NSS 52nd Round Edition (July

- 1995 – June 1996) (Report No. 439). New Delhi: Department of Statistics, Government of India.
- Petrakis P E and D Stamatakis (2002) Growth and Educational Levels: A Comparative Analysis, *Economics of Education Review* 21 (5): 513-21
- Psacharopoulos, G. (1973) *Returns to Education: An International Comparison*. Amsterdam: Elsevier.
- Psacharopoulos, G. (1994) Returns to Investment in Education: A Global Update, *World Development* 22 (9): 1325-43.
- Psacharopoulos, G., and H. A. Patrinos (2004) Human Capital and Rates of Return In: *The International Handbook on the Economics of Education* (Eds.: Geraint Johnes and Jill Johnes) Cheltenham: Edward Elgar, pp.1-57
- Psacharopoulos, G., and J.B.G. Tilak (1992) Education and Wage Earnings". In: *The Encyclopedia of Educational Research* (Editor-in-Chief: M.C. Alkin). New York: Macmillan, for the American Educational Research Association, pp. 419-23
- Rao, V.K.R.V. (1964) *Education and Economic Development*. New Delhi: National Council of Educational Research and Training.
- Rao, V.K.R.V. (1970) *Education and Human Resource Development*. Bombay: Allied.
- Ravillion, M., and G. Datt (1994) Growth and Poverty in Rural India. Washington DC: World Bank (mimeo).
- Raza, Moonis, and H. Ramachandran (1990) *Schooling and Rural Transformation*. New Delhi: Vikas for National Institute of Educational Planning and Administration.
- Romer, Paul M. (1986) Increasing Returns and Long-Run Growth, *Journal of Political Economy* 94 (5): 1002-36.
- Sachs, Jeffery (2005) *The End of Poverty*. London: Penguin.
- Schultz, Theodore W. (1961) Investment in Human Capital, *American Economic Review* 51 (1) March: 1-15.
- Schultz, T.W. (1986) Investing in People: Schooling in Low Income Countries, World Bank's Education Staff Retreat, January 10, Baltimore, Md.
- Self, Sharmistha and Richard Grabowski (2004) Does Education at all Levels Cause Growth: India, A Case Study, *Economics of Education Review* 23: 47-55
- Sen, Amartya (1999) *Development as Freedom*. Oxford: Clarendon.
- Sharma, Savita (2004) Poverty Estimates in India: Some Key Issues. ERD Working Paper no.51. Manila: Asian Development Bank.
- Speth, James Gustave (1998) Poverty: A Denial of Human Rights, *Journal of International Affairs* 52 (1) (Fall): 277-92.
- Srivastava, D.K., and H.K. Amarnath (2001) Central Budgetary Subsidies in India. New Delhi: National Institute of Public Finance and Policy.
- Srivastava, D.K., and Tapas K. Sen (1997) *Government Subsidies in India*. New Delhi: National Institute of Public Finance and Policy.
- Thakur, C.P. (1979) "Skill Generation and Labour Market in a Developing Economy," *Economic Development and Cultural Change*, 27 (2) (January): 343-56.
- Task Force on Higher Education and Society (2000) *Higher Education in Developing Countries: Peril and Promise*. Washington DC: World Bank.
- Tilak, Jandhyala B G (2004a) Higher Education and Development in Kerala, *Indian Journal of Social and Economic Policy* 1 (1) (June 2004): 61-86
- Tilak, J.B.G. (2004b) Quality Higher Education and Sustainable Development. In

- Quality Higher Education and Sustainable Development: NAAC Decennial Lectures.* Bangalore: National Assessment and Accreditation Council, 2004, pp. 77-104.
- Tilak, J B G (2003a) Higher Education and Development, in the *Handbook on Educational Research in the Asia Pacific Region* (eds. J.P. Kleeves & Ryo Watanabe) Dordrecht: Kluwer Academic Publishers, pp. 809-26
- Tilak, J B G (2003b) Vocational Education and Training in Asia, in the *Handbook on Educational Research in the Asia Pacific Region* (eds. J.P. Kleeves & Ryo Watanabe) Dordrecht: Kluwer Academic Publishers, pp. 673-86
- Tilak, J B G (2003c) A Decade of Turmoil in Higher Education in India: Faulty Assumptions, Questionable Approaches, and Undesirable Outcomes, *Higher Education Policy and Practices* 1 (1 & 2) (July-Sept): 25-31
- Tilak, J B G (2003d) Public Expenditure on Education in India: A Review of Trends and Emerging Issues, In: J B G Tilak (ed.) *Financing in India: Current Issues and Changing Perspectives*. New Delhi: Ravi Books for National Institute of Educational Planning and Administration, pp. 3-54
- Tilak, J B G (2002a) Higher Education Under Structural Adjustment," in *Economic Institutions in India* (eds.: P. Banerjee and F. Richter), London: Palgrave Macmillan, pp. 289-341
- Tilak, J B G (2002b) Education Poverty in India, *Review of Development and Change* 7 (1) (January-June): 1-44
- Tilak, J B G (2002c) Education and Poverty, 3 (2) *Journal of Human Development* (New York: UNDP) (July): 191-207
- Tilak, J B G (1999) Education and Poverty in South Asia," *Prospects* 29 (4) (December): 517-33
- Tilak, J B G (1997a) Human Capital for Development and the Development of Human Capital in India," *Anvesak* 27 (1&2) (January-December): 75-124
- Tilak, J B G (1997b) Lessons from Cost Recovery in Education." In: *Marketising Education and Health in Developing Countries: Miracle or Mirage?* (ed.: C. Colclough). Oxford: Clarendon Press, 1997, pp. 63-89.
- Tilak, J B G (1997cb) The Dilemma of Reforms in Financing Higher Education in India," *Higher Education Policy* 10 (1) (March): 7-21.
- Tilak, J B G (1994) *Education for Development in Asia*. New Delhi: Sage Publications.
- Tilak, J B G (1991) Socio Economic Correlates of Infant Mortality in India". *International Review of Economics and Business* [Rivista Internazionale Di Scienze Economiche e Commerciali] 38 (2) (February): 169-92
- Tilak, J B G (1990) Education and Earnings: Gender Differences in India," *International Journal of Development Planning Literature* 5 (4) (October): 131-39.
- Tilak, J.B.G. (1989a) *Education and its Relation to Economic Growth, Poverty and Income Distribution: Past Evidence and Further Analysis*. Discussion Paper No. 46. Washington D.C.: World Bank, February 1989
- Tilak, J.B.G. (1989b) Education and Basic Needs, in: *Human Resource Development for Rural Development*. (eds. M K Rao and P P Sharma) Bombay: Himalaya, pp. 47-67.
- Tilak, J.B.G. (1988) "Economics of Vocationalization: A Review of Evidence," *Canadian and International Education*, 17 (1): 45-62.
- Tilak, J.B.G. (1987) *Economics of Inequality in Education*. New Delhi: Sage
- Tilak, J.B.G. (1986) Education in an Unequal World, in: *Educational Planning: A Long Term Perspective* (ed. M. Raza). New Delhi: Concept, for National Institute of

- Educational Planning and Administration, pp. 27-50
- Tilak, J B.G. (1978) Poverty, Inequality and Education, *Social Change* 8 (2) (June): 25-28
- UNDP (2000) *Overcoming Human Poverty: Poverty Report 2000*. New York.
- UNESCO (1999) *Statistical Yearbook 1999*. Paris.
- UNESCO-PROAP (1998) *Basic Education for Empowerment of the Poor*. Bangkok.
- UNDP (1992, 1996, 1997, 2001, 2004) *Human Development Report*. New York: Oxford University Press.
- United Nations Millennium Project (2005) *Investing in Development: A Practical Plan to Achieve the Millennium Development Goals*. London: Earthscan. [Chairperson: J Sachs]
- Varghese, N.V. (1989) *Education and Labour Market in India*. Research Report No. 67. Paris: International Institute for Educational Planning.
- Vasudeva-Dutta, Puja (2004?) The Structure of Wages in India, 1983-1999, Sussex: University of Sussex, Dept of Economics (mimeo)
- Visvesvarayya, Mokshagundam (1931) Education and Economic Welfare, Convocation Address, Andhra University (1 December) [Reprinted in *Education System from 1930 to Establishment of Provincial Autonomy, 1935* (ed. B.M. Sankhdher) New Delhi: Deep and Deep, 1999, pp. 56-74.
- World Bank (1993) *The East Asian Miracle: Economic Growth and Public Policy*. A World Bank Policy Research Report. New York: Oxford.
- World Bank (1994a) *Poverty Reduction in South Asia*. Washington DC
- World Bank (1994b) *Higher Education: The Lessons of Experience*. Washington DC
- World Bank (1997) *Primary Education in India*. Washington DC.
- World Bank (1998) *Reducing Poverty in India: Options for More Effective Public Services*. Washington DC: World Bank (September).
- World Bank (2000) *World Development Indicators*. Washington DC.
- World Bank (2002a) *Constructing Knowledge Societies: New Challenges for Tertiary Education*. Washington DC
- World Bank (2002b) Secondary Education and the New Agenda for Economic Growth. New Delhi (mimeo)
- World Bank (2003) Secondary Education in India, Report No. 2 Discussion Paper. South Asia Human Development Sector, Washington DC
- World Bank (2005: forthcoming) *Education Sector Strategy Update*. Washington Dc.



